Evaluation of and Recommendations for the Wallace State Office Building

Final Report
16 December 2004

IMPORTANT NOTICE

This report was prepared exclusively for the Iowa Department of Administrative Services by AMEC E&C Services, Inc. (AMEC). The quality of information, conclusions and estimates contained herein is consistent with the level of effort involved in AMEC's services and based on: i) information available at the time of preparation, ii) data supplied by outside sources and iii) the assumptions, conditions and qualifications set forth in this report. This report is intended to be used by The State of Iowa, subject to the terms and conditions of its contract with AMEC. Any other use of, or reliance on, this report by any third party is at that party's sole risk.

CONTENTS

APPENDICES

1.0 EXECUTIVE SUMMARY

1.1 Project Overview

"The Department of Administrative Services (DAS), General Services Enterprise, Purchasing Division (GSE), required a complete evaluation and analysis regarding the condition of the Wallace State Office Building located on the Capitol Complex in Des Moines, Iowa, including architectural, structural, electrical, mechanical, and environmental systems and building air quality, and to assist the department in making a recommendation to the general assembly no later than January 31, 2005, as to whether the Wallace building should be renovated for future use or vacated and demolished."

The DAS issued Request for Proposal No. 20400S015, *Evaluation of and Recommendations for the Wallace State Office Building*, and, resulting from the bidding process, selected AMEC E&C Services, Inc. to perform the evaluation and analysis.

1.2 Purpose of This Document

This document is intended to be

- A review of Wallace Building current conditions
- A feasibility-level look at short-term and long-term change options for the Wallace Building
- A feasibility-level cost estimate to implement such changes.
- Recommendation for the final disposition of the Wallace Building.

This document is not intended to provide final designs, recommendations, or estimates for changes to the Wallace Building, but serves as a guide for the decision whether to renovate for future use or vacate and demolish the Wallace Building. No further information gathering toward the determination of the building's outcome is needed following this study.

1.3 Report Recommendation

The Wallace State Office Building can and should be used well into the 21st century. Environmental, economic, and Capital Complex office needs all point towards the building remodel. A qualitative comparison is outlined in the chart in section 6.8 of this report.

Major remodelling of the Wallace State Office Building includes the following major elements:

- Removal of upper level of parking area.
- Move the mechanical HVAC equipment to penthouse structures, freeing up floor space that can now be used for offices.
- Extending 2nd, 3rd, 4th, and 5th floor areas out into the large atrium space, adding usable office space.
- Complete replacement of building envelope and windows.

The advantages to a building remodel are significant:

- The Indoor Environmental Quality issues presently existing in the Wallace State Office Building will be remediated by a major remodeling of the building mechanical and electrical systems. The resulting new mechanical and electrical systems will solve the temperature / humidity control problems, upgrade the fire protection and communication systems, and correct airflow issues within the building. This will bring the remodelled building to a quality that equals or exceeds new.
- Remodeling the building will diminish the impact on the environment by continuing to utilize the building structure and much of the infrastructure servicing it. Replacement of the building exterior will give the building a fresh look while providing a low maintenance façade for many years to come.
- More usable space will be developed within the building by revising internal layout there. This provides the most cost efficient way to add office space to the Capital Complex.
- Remodeling will require less construction time than building a new building.

- The reuse of the structural elements and decreased site impact of a remodel over replacement provides roughly a 25% savings over replacement costs. The cost estimate for building replacement is approximately $45,000,000, versus a cost estimate for building remodel of approximately $32,000,000.

Remodeling offers the best use of capital, will bring the building and systems completely up to date, and provides the most cost effective long-term solution to office demands on the Capital Complex.

2.0 CERTIFICATION

2.1 Architectural

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly registered architect under the laws of the State of Iowa.

MARK S. WASESCHA — IOWA REG. #: 4036
Printed or typed name

Signature

Pages or sheets covered by this seal: Those documents listed in this report and its appendices.

DATE ISSUED: 16 December 2004

2.2 Electrical

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly registered engineer under the laws of the State of Iowa.

THOMAS GERALD RAFFIN — IOWA REG. #: 15259
Printed or typed name

Signature

Pages or sheets covered by this seal: Those documents listed in this report and its appendices.

DATE ISSUED: 16 December 2004

2.3 Mechanical

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly registered engineer under the laws of the State of Iowa.

MARK A. HOFFMAN — IOWA REG. #: 12816
Printed or typed name

Signature

Pages or sheets covered by this seal: Those documents listed in this report and its appendices.

DATE ISSUED: 16 December 2004

2.4 Structural

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly registered engineer under the laws of the State of Iowa.

JACK A. WERNER — IOWA REG. #: 11971
Printed or typed name

Signature

Pages or sheets covered by this seal: Those documents listed in this report and its appendices.

DATE ISSUED: 16 December 2004

3.0 GLOSSARY

The following industry terms and acronyms are used within this report.

ASHRAE: American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., the world's foremost technical society in the fields of heating, ventilation, air conditioning, and refrigeration. ASHRAE's technical publications are the basis of many design standards and building codes.

ATC: Automatic temperature controls. Refers to the controls used for maintaining building space temperature and humidity set points. May or may not be part of an FMCS system.

Building envelope: A system of cladding, glazed framing systems and door and entry assemblies designed to secure and make weathertight the exterior perimeter of a building.

Commissioning (Cx): A process and means of Owner verification that strives to insure that the mechanical and related systems are operating in accordance with the original design intent. With reference to the ASHRAE guidelines, Cx is a process that may include several phases of project development, design, construction, and post-construction services.

FMCS: Facility management control system. The FMCS is the "brain" that provides:

- Operational controls, thermostats and humidistats, to sense and control acceptable space conditions.
- Energy efficiency in the utilization of heating and cooling energy sources.
- A means of recording and documenting critical data.

HVAC: Heating, ventilating, and air conditioning. Heating is required to maintain winter indoor space temperatures. Some heating in the summer may be required for space dehumidification control. Ventilating refers to the proper amount of outside air for occupant comfort and to replace air exhausted from a building. Ventilating also refers to the necessary air movement in an occupied space to maintain IAQ. Air conditioning refers to the processes of heating, humidifying, cooling, dehumidifying, and filtering of air to maintain indoor space comfort and IAQ for occupants. Often, this term is used when describing a cooling system for a building or process.

IEQ: Indoor environmental air quality. Refers to anything that impacts building occupants' health and comfort; including materials of construction, natural lighting, electrical lighting, temperature, humidity, air movement, acoustics, and air quality.

IAQ: Indoor air quality. A significant component part of IEQ, generally referring to clean and contaminant free air in a building. May also refer to the proper temperature and humidity ranges that must be maintained for a high percentage of occupant comfort.

ISDG: Iowa Sustainable Design Guide. Developed through The Iowa Sustainable Design Initiative, a partnership between the Iowa Department of Natural Resources and Department of General Services, the document objective is to encourage the integration of sustainable design principles into the design and construction of projects in Iowa.

Infloor electrical duct: A system of metal channels placed into the concrete topping of a floor slab system at regular intervals to facilitate power distribution throughout open office plan areas.

KVA: Kilo volt-amps. A measure of three phase power that is roughly equivalent to watts.

Dry transformer: A transformer that is cooled with the movement of air only.

Oil transformer: A transformer that is cooled with oil circulating through external radiators like an automobile. This design facilitates preventive maintenance.

PDP or MDP: Power Distribution Panel or Main Distribution Panel. These are equivalent terms for circuit breaker panel boxes.

TAB: Testing, adjusting, and balancing. These technical services provide:

- Measurement and balancing of hydronic hot water flows (gpm) for heating pumps, and chilled water flows (gpm) for cooling pumps.
- Measurement and balancing of airflows for air handling units, fans, VAV boxes, supply air diffusers, and return grilles.

VAV: Variable air volume.

4.0 DISCOVERY REPORT

4.1 Building Tenants Survey

As one of the components of the Wallace State Office Building Discovery Report, Wallace Building critical stakeholders were surveyed by AMEC. Past and future tenants, and maintenance personnel, were asked about issues or concerns with the building, needs and wants for a building, and how the Wallace Building has served their requirements.

Of those surveyed, their comments and concerns about the building fell into several major categories—HVAC and air quality, electrical, building population, and building infrastructure and systems.

- Temperature control is not acceptable.
- Air flow quantity and quality is not acceptable.
- Indoor air quality is not acceptable.
- Electrical service to building is not acceptable.
- Number of occupants is too high for the size of the building.
- Problems exist with the building infrastructure and systems.

It is noted that the issues resulting from the existing HVAC and air quality systems in the Wallace Building are not the primary fault of the Wallace Building maintenance group. System limitations in the building mechanical systems are the core problem for existing HVAC system issues present in the building.

Additional comments within the six categories mentioned above, along with a list of people surveyed, is included in this report as Appendix A.

4.2 Environmental Study

4.2.1 Overview To Environmental Assessment Report

AMEC performed an environmental inspection of the Wallace Office Building in Des Moines, Iowa. The purpose of the inspection was to determine whether or not hazardous materials were present in the building, including materials such as asbestos, lead (including lead-based paint), PCBs, mercury, or any other hazardous material that could affect the disposal costs following either renovation or demolition of the building.

Potential sources of mercury, lead, polychlorinated biphenyls (PCBs), chlorinated fluorocarbons (CFCs), and asbestos were observed at the Wallace Office Building. If these items are disposed of, there may be special handling and disposal requirements that need to be followed.

4.2.2 Definition Of "Phase 1 Plus" Environmental Study

A Phase I environmental study includes:

1. A review of historical site records (maps, airphotos, property records, regulatory agency databases, etc.),

2. Conducting a site visit to look for potential environmental problems (stained soil, evidence of old tanks, leaks, spills, asbestos, etc.), and

3. Conducting interviews with site personnel to establish whether or not there may be any environmental issues associated with past or present activities at the site.

There is typically no sampling of environmental media done during a standard Phase I environmental study.

A Phase I Plus environmental study frequently includes some sampling and analytical testing conducted along with the Phase I study.

AMEC tailored the Phase I Plus environmental study to the needs of the Wallace Building project. AMEC's scope included a pre-demolition inspection to determine the presence or absence of hazardous materials or hazardous waste with regards to demolition or renovation, and sampling for lead and asbestos based on what was observed in the field.

4.2.3 Background To Environmental Study

AMEC's inspection scope was to verify the presence or absence of hazardous materials that could affect the cost of renovation or demolition of the building. If it appeared that nothing was hazardous via visual inspection, that would be sufficient and no samples would be required (except for the indoor firing range). If it appeared that hazardous materials were present, sampling was done to confirm the presence or absence of these materials. In some cases (mercury thermostats or fluorescent lights, for example), it was not necessary to sample for contaminants. If it was obvious that mercury was present, its presence was noted.

AMEC's scope did not include collecting any samples from potential hazardous materials associated with the operation of the laboratory or laboratories.

A full copy of the environmental inspection report, the asbestos sample data, and the lead sampling test results are included as Appendix D.

4.2.4 Polychlorinated Biphenyls (PCBs)

The only potential PCB-containing items identified in the building were the fluorescent light ballasts. Further investigation is warranted.

PCBs are regulated by EPA under the Toxic Substances Control Act (TSCA). If PCBs are detected at a concentration above 50 parts per million (ppm) in a material to be disposed of, the material must be handled as a TSCA remediation waste.

4.2.5 Mercury

There were a number of potential mercury-containing items identified, including fluorescent lights, smoke detectors, thermostats, high intensity lights, emergency exit signs, and circuit breaker boxes. The older fluorescent lights probably contain mercury, and the thermostats probably do not. The thermostats can be segregated visually by opening them up to see whether they contain a mercury tube or just a spring. If it cannot be determined visually, it is recommended that these items be dealt with by recycling.

Mercury and lead are regulated by the Environmental Protection Agency (EPA) under the Resource Conservation and Recovery Act (RCRA). If mercury and / or lead are detected at concentrations above their toxicity characteristic limit in material to be disposed of, the material must be handled as a characteristic hazardous waste. The toxicity characteristic limit for lead is 5.0 milligrams per liter (mg/l), and the toxicity characteristic limit for mercury is 0.2 mg/L.

4.2.6 Lead

At the indoor firing range, the lead samples taken indicate that the lead contamination is confined to the firing range itself. Both wipe samples taken inside the firing range exceeded the 40 microgram concentration that is considered to be the cut-off for lead contamination in wipe samples. However, the wipe sample taken on the wall just outside the firing range was below 40 micrograms of lead. No lead was detected in paint samples taken inside the building.

4.2.7 Refrigerant Chlorofluorocarbons (CFCs)

Potential sources of CFCs within structures include fire extinguishers, air conditioners, refrigerators, chillers, heat pumps, and so on. Within the Wallace Building, there are fire extinguishers, coolers, water fountains, refrigerators, freezers, vending machines, and a drying cabinet found, all of which could potentially be CFC sources. These items have been identified in the environmental report. If any of this equipment is removed, proper recycling of any CFCs is required.

CFCs are regulated by the EPA under the Clean Air Act (CAA). The CAA provides requirements for servicing and disposal of air-conditioning and refrigeration equipment to minimize the release of such refrigerants to the atmosphere during servicing or disposal.

4.2.8 Asbestos

Asbestos-containing materials (ACM) were identified within the building. Both friable and non-friable ACM were found. Regulations exist with regard to removal and disposal of ACM. It is recommended that a state certified asbestos abatement contractor remove the materials prior to any demolition activities.

Asbestos is regulated by the EPA under the CAA National Emissions standard for Hazardous Air Pollutants (NESHAPS), which provides work practices to be followed during demolitions and renovations of all buildings to minimize the release of asbestos fibers during activities involving the processing, handling, and disposal of asbestos-containing material (ACM). In addition, the TSCA Asbestos Hazard Emergency Removal Act (AHERA) specifies additional requirements for schools when dealing with potential ACM.

Per the Environmental Protection Agency, at http://www.epa.gov/asbestos/:

“Asbestos is not always an immediate hazard. In fact, if asbestos can be maintained in good condition, it is recommended that it be left alone and periodic surveillance performed to monitor its condition. It is only when asbestos containing materials (ACM) are disturbed or the materials become damaged that it becomes a hazard. When the materials become damaged, the fibers separate and may then become airborne. In the asbestos industry, the term ‘friable’ is used to describe asbestos that can be reduced to dust by hand pressure. ‘Non-friable’ means asbestos that is too hard to be reduced to dust by hand. Non-friable materials, such as transite siding and floor tiles are not regulated provided it does not become friable. Machine grinding, sanding and dry-buffing are ways of causing non-friable materials to become friable.”

4.3 Indoor Air Quality Assessment

AMEC performed an indoor air quality (IAQ) assessment at the Wallace State Office Building on 10 November 2004.

The purpose of the IAQ evaluation was to assess current IAQ conditions and determine if there were any significant health hazards to workers who occupy the building. The assessment focused on three primary areas:

- Evaluating potential sources of airborne contaminants: particulate matter (PM), volatile organic compounds (VOCs), and formaldehyde,
- Evaluating potential amplification of fungal spores in the indoor air, and
- Monitoring trends of carbon dioxide (CO_2), carbon monoxide (CO), temperature, and relative humidity that are indicators of ventilation effectiveness or general comfort conditions in the building.

4.3.1 Major Findings Of IAQ Assessment

An overview of study findings is listed below. See Appendix E for the full, detailed report.

- No potential sources of air contaminants were identified in the Wallace State Office Building that would be considered significant health hazards to building occupants. The air sampling results indicate generally good indoor air quality.
- The analytical results for particulate matter (PM), volatile organic compounds (VOCs), and formaldehyde indicate airborne concentrations were below recommended guidelines for office buildings.
- The laboratory analytical data obtained for fungal spores showed no evidence of indoor microbial amplification, as airborne concentrations measured indoors were less than those measured outside at the fresh air intakes to the heating, ventilating, and air conditioning (HVAC) systems.
- The monitoring results on this date for carbon dioxide (CO_2), carbon monoxide (CO), temperature, and relative humidity were consistent with recommended ASHRAE guidelines.

5.0 REAL ESTATE EVALUATION

The State of Iowa Capitol Complex has a deficit in office space, and, in combination with centralized services and decreased overhead costs, office space within the Capitol Complex is preferred.

5.1 Office Space Demand for Capitol Complex

Per the SGS Group *Iowa Capital Complex Facilities Needs Assessment Supporting Documentation, Appendix B, April 19, 2000,* there is "…a projected need in the year 2020 of between 2,032,389 net square feet (NSF) and 2,206,989 NSF. The current space inventory totals 1,084,000 NSF of owned space."

The Wallace State Building provides approximately 147,130 NSF of space.

- At the end of 2004, laboratory occupants will vacate 10,800 NSF of space in the Wallace Building.
- In 2006, Public Safety occupants will vacate 38,500 NSF of space in the Wallace Building.

If the Wallace Building can be renovated and its square footage reused, there is certainly a need for the space, based upon the SGS Group study.

5.2 Value of On-Campus Office Space

Wallace Building site value is driven by demand. In 1999, roughly 300,000 square feet of space was leased by default in the Capitol area and in downtown Des Moines. This deficit of on-campus office space is the demand driver. Based on the "Facilities Needs Assessment Supporting Documentation Appendix B" off-campus lease rates averaged $13.87 per rentable square foot (RSF). In 1999 full service lease rate of $12.32 per RSF is the break-even rate for the State to pay for off-campus leases in comparison to on-campus costs. The net savings of $1.55 per RSF results in the Wallace building having a net real estate value to the State of roughly $250,000 per year. This is an annual savings to be realized by the Iowa taxpayers.

6.0 BUILDING ASSESSMENT

6.1 Building Mechanical Utilities Study

As indicated by the existing building documents and site observations, the mechanical systems are served by outside utility services for plumbing, fire protection, and heating, ventilating, and air conditioning (HVAC) needs. These systems typically provide utility services entering or leaving the building.

Water: From the north City water line, two 6-inch underground potable water lines enter the building. One provides potable water for the plumbing systems, and the other provides water for the fire protection sprinkler system.

Sanitary Sewer: From the west half of the building, a 4-inch underground sanitary sewer line exits the building. From a more central location, a 6-inch underground sanitary sewer line exits the building. Flow from both lines is to the north.

Acid Waste Sewer: A 4-inch or 6-inch acid waste sewer line exits the building to the north. Flow enters an acid dilution basin, and then piping discharges flow to the sanitary sewer.

Storm Sewer: For most of interior roof storm water drainage, an underground 15-inch storm sewer line exits the building to the north. Mostly for storm water drainage from the Parking Ramp, an 8-inch line also exits to the north. Since original construction, the underground storm sewer system was separated from the sanitary sewer system.

Chilled Water: From the Capitol Complex Central Plant, 8-inch chilled water supply and return services are piped through an underground tunnel. To meet rated design cooling capacity, air handling unit (AHU) cooling coils require 46°F chilled water. At times, the central plant chilled water production and distribution system has not provided adequate chilled water flow and / or temperature.

Further study, not part of this project, is recommended to clearly identify chilled water production problems, analyze options, and provide recommendations for future upgrades.

Steam: From the Capitol Complex Central Plant, 6-inch high-pressure steam supply and 4-inch steam condensate return services are piped through an underground tunnel.

Natural Gas: A 3-inch natural gas service enters from the north. Natural gas is provided to a summer hot water boiler, water heaters, and lab services.

6.1.1 Plumbing Systems Review

Based on visual inspection and meeting with the maintenance staff, the plumbing systems appear to be in good operating condition. Some problems have been reported that include:

1. For potable cold and hot water piping distribution, the number of shutoff isolation valves is deficient.

2. Some apparent leakage problems exist above 2nd Level West.

3. Sweating on some cold water piping has been a problem. Insulation may need to be added.

4. Where in direct contact with concrete floor, some horizontal cast iron sanitary sewer piping has corroded and leaked. Portions have been replaced. Major renovations have helped to alleviate this issue, although this condition could still exist in unidentified areas. This has not appeared to be problem in any of the vertical sewer piping stacks.

6.1.2 Fire Protection Systems Review

Based on visual inspection and a meeting with the maintenance staff, the fire protection sprinkler system appears to be in good operating condition. Some problems have been reported that include:

1. The number of tamperproof system shutoff valves is deficient. When only minor sprinkler head remodeling or changes are required, large parts of the system must be drained and then refilled.

6.1.3 HVAC Systems Review

Based on visual inspection and meeting with the maintenance staff, the HVAC systems appear to be in good operating condition for equipment this old. The equipment does not, however, meet the needs of the building. Some significant problems have been reported that include:

1. Original AHUs unable to provide more than 60-70% of design airflow. At 100% design conditions, supply and return duct airflow velocities and air pressure

drops are excessive. This has caused excessive sound in the occupied spaces, and decreased the comfort in the office area. Also, cooling coil face velocity can reach 600 feet per minute, causing poor summer dehumidification.

2. Due to reported deficiencies in AHU-1 system performance, a packaged Trane rooftop unit (RU-1) was added for 2nd Level DCI lab areas, and AHU-9 was added to serve the Metrology Lab space.

3. Summer space temperatures and humidity have been generally too high. Although not witnessed, summer outside air and space dehumidification has been reported to be very poor.

4. There is very poor access (inaccessible or exact location unknown) to secondary hot water heating pumps, piping, and control valves. This occurs on all five levels. Operating condition of equipment has not been verified.

5. There is poor air distribution in many areas. Many occupants use small circulating fans and small electric heaters in summer and winter.

6. Recirculation of exhaust airflow into the outside air intake of some AHUs has been documented and observed. This can reduce the indoor air quality for the occupants.

7. Particularly in the Atrium large glass areas, significant winter cold downdrafts have been reported. Perimeter fin tube, hot water heating coverage is only partial.

8. Wide variation in temperatures between north and south areas. Space temperature ranges of 66-80°F have been documented. Occupants sitting directly under some supply air diffusers have experienced an even wider range of temperatures.

6.2 Facility Management Control Systems (FMCS) review

Based on visual inspection and meeting with the maintenance staff, FMCS appears to be in good operating condition. Many controls have been upgraded and are compatible with the current Siemens FMCS for the Capitol complex. Some problems have been reported that include:

1. Some original pneumatic control components remain. Their operating condition has not been verified.

6.3 Testing and Balancing Report

Existing Testing and Balancing (TAB) reports from the original construction or from more recent years were not found.

For seven of the ten larger air handling units, airflow measurements were taken during the week of November 8 for the office areas on levels one through five. For five of the office area AHUs, peak airflow measured averaged 63.4% of the original design intent. For the lab spaces on the first level, one AHU was operating at 37.9% and the other was at 60.3% of the original peak cfm design intent.

Chilled water flow measurements were not possible at this time. The chilled water cooling system had been drained for the season.

Hot water flow measurements at each floor level were not possible at this time. The secondary hot water heating pumps are not accessible.

6.4 Electrical Systems Review

The primary electrical power into this facility is provided by two (2) 1000 KVA transformers. These transformers are each loaded to approximately half of their full capacity, and have room for expansion and additional loading. In order to be able to use the available transformer capacity, however, the excessive heat in the electrical room must be addressed. Currently, the electrical room temperature, now about 120 degrees F, is too hot to allow full utilization of the transformers.

Internal building electrical distribution is currently near capacity, and expansion of existing office space requires additional feeds and associated circuit breaker panels.

6.5 Communications Systems Review

The communications system was reviewed and it was determined that the system is acceptable as found, however there is a lack of fiber optic cable in the building, and this could limit further high-speed computer networking.

The fire detection and alarm system presently appears to be in working condition, however, it is obsolete, performing at capacity, and requires continuing maintenance.

6.6 Building Accessibility Review

6.6.1 Restroom Requirements

Wallace Building restroom fixture review, per the State of Iowa Building Code, Chapter 16, 661—16.401 (104B):

Water Closets	Urinals	Lavatories	Comments
1st floor			
10	2	12	Existing
7		4	Required
10 *	2 *	10 *	Proposed
			* including accessible fixtures
2nd floor			
14	3	16	Existing
7		4	Required
17 **	4 **	18 **	Proposed
			** including accessible fixtures in main restroom and new fixtures in proposed auditorium restroom area as per A-1 requirements
3rd floor			
7	2	8	Existing
5		3	Required
7 *	2 *	6 *	Proposed
			* including accessible fixtures
4th floor			
7	2	8	Existing
5		3	Required
7 *	2 *	6 *	Proposed
			* including accessible fixtures
5th floor			
7	2	8	Existing
5		3	Required
7 *	2 *	6 *	Proposed
			* including accessible fixtures

6.6.2 Stairwells

The existing Wallace Building stairwells have approximately 7” risers and 10” treads. Per the Department of Public Safety, Building Code division, the existing stair design can remain in place. Additional smoke detectors and other fire safety upgrades should be provided in lieu of extensive stair remodelling or complete reconstruction. New handrail designs, to meet current code, should be provided.

6.6.3 Elevators

The elevators do not operate correctly, and do not meet current accessibility requirements. Elevator service needs improvement.

6.7 Code Review

6.7.1 Civil / Structural / Architectural Code Issues

The State of Iowa Building Code and 1994 Uniform Building Code (UBC) were referenced for review; however, the 2000 edition of the International Building Code (IBC) was also reviewed for current standards.

Accessibility into the building, within the building, and to and within restrooms was reviewed for compliance with the State of Iowa Building Code (661 Iowa Administrative Codes, Chapter 16).

The architectural short-term repairs and modifications will not bring the building into compliance with current codes. Items still out of code compliance include (but are not limited to):

1. Access of personnel and visitors from the parking structure across Pennsylvania Avenue.

2. Non-compliant elevators, controls (elevator operation also needs improvement).

3. Restroom accessibility.

4. Accessible door hardware.

5. There are structural problems with existing beams, retaining walls, and double tees of the Wallace Building Parking Ramp. This system can no longer support the loads it was intended to carry. The most severely cracked and deflected ramp beams will be shored, but the double tees are still deficient. Parking on the upper level has been restricted.

Accessibility issues / upgrades to be performed on a case-by-base basis. The ADA Advisory Committee should be consulted on these issues.

6.7.2 Mechanical Systems Code Issues

The State of Iowa Building Code, which references the 1994 Uniform Mechanical Code (UMC), was referenced for code review; however, the International Mechanical Code (IMC) was referenced for more current standards for the long-term evaluation and remodel. More recent ASHRAE energy guidelines were also referenced.

Based on the existing construction, occupancy, and use of space, specific Iowa building code deficiencies have not been reported at this time. With the relocation of the first and second floor labs to other sites and as the space utilization changes, some upgrades to comply with more recent codes will be desirable or required. When significant changes occur, a meeting with the Fire Marshall is recommended.

1. Plumbing

    a. Depending on the number of occupants, the number of water closets, urinals, and lavatories will change on each floor.

    b. To comply with accessibility guidelines, appropriate plumbing fixtures with adequate space are required.

    c. To comply with the National Electrical Code, drain pans need to be installed under piping in the electrical room, and / or several pipes must be re-routed so as not to cross over electrical switchgear.

2. Fire Protection

    a. No specific code deficiencies have been reported at this time.

    b. To facilitate proper and efficient sprinkler system remodeling, additional tamperproof shutoff valves may need to be added.

3. HVAC

    a. For proper operation of the existing natural gas heating boiler; the boiler room general construction, combustion air source, and flue venting system should be reviewed with the Fire Marshall. Some improvements are recommended and required.

    b. Testing and Balancing (TAB) should be performed to insure that code required exhaust ventilation, particularly for restrooms, is adequate.

    c. TAB should be performed to insure that code minimum required outside air ventilation is being maintained during occupied hours.

6.7.3 Electrical Systems Code Issues

The 1975 National Electrical Code (NEC) allowed that one exit from the electrical room was sufficient. In the 1978 NEC revisions, however, this was changed to two exits, and the issue is a life safety concern. The 1996 NEC was referenced for building review.

Electrical equipment and transformer locations do not meet the National Electric Code. There are unidentified circuits in circuit breaker panels throughout the building.

6.8 Pros and Cons of Building Replacement vs. Remodelling

Below is a qualitative table of pros and cons for total building replacement versus remodelling of the existing Wallace Building.

	Building Replacement on Complex		Major Building Remodel	
	Pro	**Con**	**Pro**	**Con**
Life cycle real estate value	√			√
Capital cost		√	√	
Building utilization	√		√	
Environmental impact		√	√	
Capitol Complex Master Plan compliance	√		√	
Aesthetic improvements	√		√	
Comfort and indoor air quality	√		√	
Energy efficiency	√		√	
Operation and maintenance	√		√	
Electrical, communications opportunities	√		√	
Proximity to Capitol building	√		√	
Risk		√	√	

6.9 Recommendations for Short-Term Building Work

The goals of the short-term recommendations are to improve the quality of building occupancy conditions for a two-year period. Due to the economics of the extensive remodelling needed to bring the building up to current codes, these items are not intended to be a long-term solution for the building issues.

This section presents an overview of the short-term building work scope found resulting from this study. For a detailed listing of these short-term building work scope items, see Section 01010, Summary of the Work, 2.0, Part 2 – Description of Short-Term Work, presented in Appendix B.

6.9.1 Parking Ramp

The existing upper parking deck is showing signs of overstress (overloading) and severe deterioration. To prevent any further deflection of primary beams, they should be shored – just to maintain their own weight, the weight of foot traffic, and that of snow loads, until the beams can be removed.

6.9.2 Utilities

The existing transformer and primary switchgear situation in the Electrical Room on first level does not meet code, and preventive maintenance on dry transformers is difficult. For these reasons, it is best to move the transformers and primary fused disconnects outside of the building. Moving this switchgear will require a planned power outage in other buildings. Careful planning will be required to minimize the impact on building occupants and the surrounding area.

6.9.3 Roof

The existing roof above the second level is at its warranty age. It should be monitored and repaired as required until replacement is possible.

6.9.4 Entrances

The existing Electrical Room does not have two exits as required by current code. Adding one exit to the exterior of the building roughly opposite the existing electrical room entrance is required under life safety recommendations.

6.9.5 Main Electrical Room Design

The Electrical Room is not constructed of adequate fire-rated wall or ceiling assemblies.

6.9.6 HVAC

The purpose of the following HVAC work is to insure that the existing mechanical equipment, components, and systems are performing in accordance with the original design intent.

The correct supply air diffusers should be used in all areas. If not, some occupants sit directly in the supply airstream. Depending on space cooling or heating requirements, these particular occupants will feel supply air temperatures changes from 55°F to 95°F. Review of diffuser and the change out of some is recommended.

As originally installed, some of the heating system equipment is not accessible for proper maintenance and testing. Improved access and relocation of some equipment is required to insure proper and peak performance.

Testing, adjusting and balancing (TAB) for all major HVAC equipment is recommended. This includes hot / chilled water pumps, air handling units, exhaust fans, VAV boxes, supply air diffusers, and return air grilles.

Some of this work applies toward the “Long-Term Work” solutions.

6.10 Recommendations for Long-Term Building Work

The goals for the long-term recommendations for the Wallace Building are to bring the building into code compliance, provide a long-term, serviceable office area, and to create a level playing field for the comparison of the building's long-term use versus demolition and replacement.

This section presents an overview of the long-term building work scope found resulting from this study. For a detailed listing of these long-term building work scope items, see Section 01010, Summary of the Work, 3.0, Part 3 – Description of Long-Term Work, presented in Appendix B.

6.10.1 Grounds And Landscaping

The Wallace Building design does not address today's safety concerns. Public access must be maintained, but some modifications should be made to restrict vehicle approaches to the main building entrance.

The existing reflecting pool will be removed and will not be replaced.

6.10.2 Wallace Parking Ramp

There are signs of severe deterioration to the topping slab covering the precast double tees. The precast double tees and the cast-in-place beams supporting them present a critical structural problem. Crack patterns within these members appear to be indicative of applied load(s) beyond the design limit. These flexural cracks, coupled with water intrusion from openings through the topping, are allowing the reinforcing steel to rust and expand, accelerating the deterioration of the structural elements. The structure is beyond repair and needs to be removed.

The slab-on-grade has settled and/or heaved in many areas. The sidewalk along the south side of the lower level has also shifted. These conditions present a hazard to pedestrian traffic. Within the parking slab some of the differential movement is beyond 2 ½ inches. The paving needs to be replaced.

Storm water drainage into and within the lower level is poor. The vehicle entrance off Des Moines needs to be modified to prevent street drainage out of the ramp and should be redesigned to provide better security.

6.10.3 Sidewalks And Parking

Since the new parking structure was built on the west side of Pennsylvania, across from the building, most personnel from the building park in this ramp. They approach the building from the intersection of Des Moines and Pennsylvania, crossing through shrubbery between the sidewalk along Pennsylvania and the dock area. They enter the building through the loading dock doors. The loading dock doors were not designed to serve as a primary entrance. For this and other reasons, additional entrances on the west side of the building are recommended.

6.10.4 Utilities

Mechanical and electrical utilities provide the necessary resources and energy for the operation of the building systems and comfort of the occupants.

6.10.5 Roof

Greenhouse Roof – This space was designed as a plant greenhouse. It has never met this function. The space is not wide enough to allow direct sunlight to reach plant tables. The space is cool or cold, depending on the season. The roof system, of a curtain wall type framing, leaks. The greenhouse roof needs to be replaced with a more conventional roof membrane assembly.

Main Roofs – The built-up roof above the fifth level has aged to the point of requiring replacement. The membrane roof above the second level (north and west side of the building) has reached the end of its design life. The entire roofing system needs replacement or excessive maintenance will be required.

6.10.6 Walls

The existing exterior walls are clad with a brick veneer. The brick consists of soft, coarse porous clay that has been wire cut and is finished with a baked-on white glaze. The brick units are oversized, 12" by 12" by 4" deep formed with four open vertical cores. The brick veneer is supported on steel relieving angles at 14-feet on-center vertically with the angles connected to the edge of the building perimeter slabs. Brick expansion joints are located at the building grids, 30-feet on-center along the walls square to the building and at 42-feet plus along diagonal walls.

The brick has expanded and crushed the joint filler within the expansion joints. Areas of mortar coursing have cracked, split or fallen out, providing openings for water and wind to enter the cavity behind the brick. The brick glazing has also lost most of its

waterproofing properties. Areas of brick absorb and/or hold water after any significant precipitation. This is visible on the exterior of the building and results in an unsightly appearance. On the interior of the building there have been complaints about water intrusion (some from areas of absorbed water, others from straight intrusion of water).

The exterior walls are insulated with two inches of rigid foamed insulation board (R-10) when placed behind masonry units on the interior. At areas to the inside finished with steel stud and gyp board the wall is insulated with a three-inch fiberglass batt (R-11). Neither of these systems now provides the current recommended thermal resistance for exterior walls. No vapor / water barrier exists between the brick and the inside surface and there aren't any drainage weep holes above each ledge support.

Windows exist only on the southeast and south facades, with a small area of glass on the west side aligned with the existing break rooms on third, fourth and fifth levels. The glass is reflective, with the southeast and south expanses of glass providing a mirror to reflect the Capitol Building. The glass on the southeast and south sides aligns with the existing building atrium spaces. The glazed framing system will be replaced.

The best long-term solution to the building envelope issues is replacement with architectural precast concrete panels. An alternative to replacement of the building envelope is to relieve selected masonry joints, tuckpoint, caulk, and apply a breathable water repellent coating to the existing building exterior. This system represents significant savings, but will require proactive maintenance.

6.10.7 Entrances

As the existing parking ramp upper level is structurally unsound (and under the primary option will be removed), the entrances along Grid 9 need to have stairs installed to facilitate their continuing service.

The existing building curtain wall across the back of the dock area does not provide the necessary thermal barrier and infiltration barrier necessary to keep temperatures stabilized along the north side of the building. An additional vestibule with new doors will be installed.

At the northwest corner of the building, a new personnel entrance will be installed.

6.10.8 Lab Area to Offices

The existing first and second level offices will have all interior non-loadbearing walls removed, creating an open office environment. All finishes from ceiling to floor will be removed and replaced. There will be minor modifications required to mechanical and electrical systems. Existing floor toppings will be removed and replaced, to including a system of under floor electrical ducts.

6.10.9 First and Second Floor Existing Office Areas

To open up all space for office functions, remove the separation walls between the existing office areas and the existing lab areas.

6.10.10 Restrooms

None of the restrooms within the building comply with all accessibility requirements. In most cases, entry hallways and entry doors need to be reconfigured to allow access. The necessary numbers of fixture type, shape, and accessibility in all restrooms will be upgraded to meet current requirements (see table in section 6.6.1. of this document). Door hardware and restroom accessories will be upgraded. The occupancy change of the building from lab to office will require addition fixtures on first and second levels. The existing fixture counts on third, fourth, and fifth levels are insufficient. It is recommended that an additional restroom area be located on each level.

The existing fixture-to-plumbing connections require modification. All fixtures should be upgraded with infrared sensing valves and faucets. Piping isolation valves should be added at each level to simplify repairs. Restroom exhaust will be modified.

6.10.11 Janitor's Closets

One additional janitor's closet should be added on second level adjacent to the restroom core area.

6.10.12 Utility Chases

The current electrical shafts in the building concentrate electrical services in one location, limiting the power available to offices and computer usage, and overloading the floor ducting system. Mechanical system upgrades require additional access routes for utilities.

For these and other reasons, new fire-rated utility shafts for mechanical and electrical systems will be added.

6.10.13 Metrology Lab Area Conversion

Conversion of the Metrology Lab area is needed to provide an employee entrance to the building, additional office space, and loading docks with interior storage.

6.10.14 Existing Dock Area

Air infiltration from the Dock Entry into the first level north corridors is a problem. Currently, excessive winter and summer infiltration of outside air causes objectionable space temperature and humidity conditions in these areas. Addition of a wall will create a vestibule area and mitigate air infiltration. Mechanical heating and cooling systems will be installed to temper the air. This will improve indoor comfort from this area up through the fifth floor elevator lobby.

6.10.15 Atrium Spaces

The existing atrium spaces do not meet the fire and smoke control requirements of current codes. Current code restricts the height of atriums to two floors. The openness of these spaces complicates ventilation control and makes sound isolation between floors nearly impossible. Within the existing 'Terrarium,' the plants, earth, a fishpond, and reptiles all contribute to problems with air quality and moisture load in the building. The fountain within the pond creates too much noise when in operation, and as a result is not in operation. The atrium spaces take up large amounts of area that could be utilized for office functions.

During extreme winter conditions, heating is not sufficient to prevent cold space conditions and objectionable downdrafts. During extreme summer conditions, cooling and airflow capacity is not sufficient to maintain desirable space temperature and humidity conditions.

The atrium spaces will be divided into two story spaces that will provide additional usable space while still maintaining open public space.

The atrium perimeter is open, allowing for the free movement of air and noise. In an effort to restrict both of these, open balconies on the third and fifth floor will have curtainwall systems installed.

6.10.16 Third, Fourth, Fifth Floors

Most of the third, fourth, and fifth levels are dedicated to open office design. In order to bring these spaces up to electrical and mechanical standards, ceilings and floors need to be removed and replaced. Third and fourth level mechanical and storage areas on the north side of the east wing can be demolished and converted to office space. Windows will then be added along the north wall on these floors.

6.10.17 Elevators

The existing elevators are all original equipment, 26 years old, and are showing their age. Car operation is shaky, and stops end with a distinct bounce of the cable system. They do not meet current accessibility requirements.

All elevator systems need to be replaced.

6.10.18 Stairs And Railings

The tread dimensions presently do not meet current code requirements. A review with the Iowa Department of Public Safety, Building Code Division, was conducted with respect to the stairs. The result of this meeting is that with additional fire detection equipment, the existing stair treads may remain in service.

Stair handrails do not meet the current code and will be replaced.

6.10.19 Main Lobby Vestibule

Additional glazing will be added to provide an airlock and to create a separate auditorium lobby. This will improve building HVAC, reducing excessive outside air infiltration.

6.10.20 HVAC (See Sketch SK-MECH-001)

The following heating, ventilating, and air conditioning systems (HVAC) recommendations are based on addressing all noted deficiencies including:

- Areas too hot in summer, but some also too hot in winter.
- Areas too cold in winter, but some also too cold in summer.
- Poor air movement occurs in some areas, while excessive air movement occurs in other areas.
- Poor indoor air quality (IAQ) perceptions.
- Excessive sound levels from HVAC systems.

Implementation of changes to the mechanical system to address the conditions noted above will provide mechanical systems consistent with current building codes; ASHRAE standards for IAQ and energy efficiency; and the Iowa Sustainable Design Guide.

- Replace nine of ten existing air handling unit (AHU) systems with all new equipment. One unit will be located on the 5th Level roof, and a second unit will be located on the 2nd Level roof. Each unit will be of a packaged, custom penthouse design and quality.
- Replace all existing variable air volume (VAV) boxes with new series fan-powered variable air volume boxes with hot water coils (FPVAVHW).

6.10.21 Facilities Management Control System (FMCS)

The FMCS is the "brain" that provides:

- Operational controls, thermostats, and humidistats, to sense and control acceptable space conditions.
- Energy efficiency in the utilization of heating and cooling energy sources.
- A means of recording and documenting critical data.

The existing system will be upgraded to accommodate the HVAC work.

6.10.22 Testing, Adjusting, And Balancing (TAB)

These services provide:

- Measurement and balancing of hydronic hot water flows (gpm) from heating pumps, and chilled water flows (gpm) from cooling pumps.
- Measurement and balancing of airflows for air handling units, fans, VAV boxes, supply air diffusers, and return grilles.

This function is critical to the long-term comfort of the building occupants. It is recommended that this service be retained by the State directly.

6.10.23 Commissioning (Cx)

A process and means of Owner verification that strives to insure that the mechanical and related systems are operating in accordance with the original design intent. With reference to the ASHRAE guidelines, Cx is a process that may include several phases of project development, design, construction, and post-construction services. Development of a "Cx Scope" is required before a potential cost may be estimated. Commissioning is outside the scope of this study.

6.10.24 Electrical – Main

The existing switchgear is original equipment and is approaching its design life. The space between equipment and the available egresses out of the room do not meet the National Electrical Code requirements. Installation of new transformers and main power systems are required if the change is not performed as part of the short-term work on the building.

6.10.25 Electrical – Distribution

The existing electrical distribution is concentrated in one location on all floors. This results in the limitation of cubicle and computer power requirements due to space availability. By feeding all the floors from two locations, this opens up more under floor electrical ducts for power distribution.

6.10.26 Lighting

The existing electrical lighting on the floors is manually operated, and does not automatically turn off areas when people are not present. The conference rooms also need to have methods for dimming lighting to allow presentations and visual displays or computer screens to be viewed without impacting people's vision. By adding dimming ballasts for lighting and lighting contactors to automatically turn off sections of lighting, significant energy savings can result, and improvements in occupant comfort will occur.

6.10.27 Phone

The existing phone system distribution is concentrated in one location on all floors. Although currently adequate, space in the electrical floor ducting is limited. This results in cubicle and office phone requirements being hampered due to space availability. Feeding all the floors from two locations will free up more under floor electrical ducts for phone distribution. Adding fiber throughout the building will allow faster computer communications and provide excellent service to building tenants well into the 21st century.

6.10.28 Public Address System

Presently the existing public address (PA) system can only handle emergency announcements. The installation of a modern system is planned.

6.10.29 Low Voltage Systems

A new updated low voltage system will be installed.

7.0 SCOPE OF WORK FOR REMODELING OPTIONS

A scope of work / construction specification, labelled Section 01010, Summary of the Work, was prepared for the Wallace Building refurbishment and reuse option. The scope / specification, which includes General Conditions, scope of work for short-term building work, and scope of work for long-term building work, is included as Appendix B.

8.0 ESTIMATE

The estimate details for both short-term and long-term Wallace Building work options are attached in Appendix C.

8.1 Short-Term Work

The short-term work estimate is $622,749.

HANSCOMB Faithful&Gould

Schematic Design Cost Estimate
12/15/2004

WALLACE BUILDING EVALUATION
Short Term Repairs and Modifications
EXECUTIVE SUMMARY

SITE				**168,900**
BUILDING ENVELOPE				**14,500**
BUILDING INTERIOR				**74,655**
BUILDING MECHANICAL				**148,500**
BUILDING ELECTRICAL				**39,350**
SUBTOTAL				**445,905**
MARK-UP				
General Conditions/insurance/bond/permits	9.00%	of	445,905	40,131
CM/GC Fee	4.00%	of	486,036	19,441
Architect/Engineer Design Fee	12.00%	of	505,478	60,657
SUBTOTAL				**566,135**
CONTINGENCIES/ESCALATION				
Design Contingency	10.00%	of	566,135	56,614
Escalation (Excluded)				
Construction Contingency (Excluded)				
Owner's Contingency (Excluded)				
CONSTRUCTION TOTAL				**622,749**

8.2 Long-Term Work

The long-term work estimate is $31,174,398.

HANSCOMB Faithful&Gould

Schematic Design Cost Estimate
12/15/2004

WALLACE BUILDING EVALUATION
Long Term Work

EXECUTIVE SUMMARY

SITE				**825,658**
BUILDING ENVELOPE				**7,521,861**
BUILDING INTERIOR				**7,972,926**
BUILDING MECHANICAL				**4,515,000**
BUILDING ELECTRICAL				**2,313,000**
SUBTOTAL				**23,148,444**
MARK-UP				
General Conditions/insurance/bond/permits	9.00%	of	23,148,444	2,083,360
CM/GC Fee	4.00%	of	25,231,804	1,009,272
Architect/Engineer Design Fee	8.00%	of	26,241,076	2,099,286
SUBTOTAL				**28,340,362**
CONTINGENCIES/ESCALATION				
Design Contingency	10.00%	of	28,340,362	2,834,036
Escalation (Excluded)				
Construction Contingency (Excluded)				
Owner's Contingency (Excluded)				
CONSTRUCTION TOTAL				**31,174,398**

8.3 Total Building Replacement

Utilizing cost factors from other government projects, Hanscomb Faithful & Gould has developed the following estimated costs for building replacement. Based on office gross square footage of 250,000 SF, the costs would be as follows:

Complete Demolition and Rebuild

Should the Owner opt for the complete demolition of the Wallace Building, and the construction of a replacement structure then the cost is likely to be in the region of:

	$ Range
Demolition	$500,000 - $1,000,000
New Class B Office	$40,500,000 - $47,250,000
Total	$41,000,000 - $48,250,000

The new office construction costs are based upon a conventional structure with a 250,000 gsf, and include an 8% allowance for Design Fees.

APPENDIX A

BUILDING TENANTS SURVEY

Survey Participants

AMEC surveyed the following people for their comments on the Wallace Building and its systems, the building site, and related issues.

- Darwin Chapman; Director DCI
- Mary Jane Olney; Director, Market Development and Administrative Services Division, Iowa Department of Agriculture and Land Stewardship
- Craig Deichmann; Facilities Engineer, Design and Construction Division General Services Enterprise
- Daryl D. Frey; Administrator, Labor Relations Program Human Resource Enterprise
- Tim Ryburn; Facilities Administrator, General Services Enterprise
- Barbra Bendon; Executive Officer, Leasing/Move Management, Design and Construction Division General Services Enterprise
- Ken Thornton, Plant Operations, G.S.E.
- Kevin Tucker, Power Plant Engineer, G.S.E.

Survey Comments

The respondents' comments and concerns about the building fell into several major categories—HVAC and air quality, electrical, building density, and building infrastructure and systems.

Although complete interview notes are not presented within this report, the following complaints and concerns were heard most often:

- Temperature control / comfort is not acceptable.
    - Extreme temperature swings are the norm. Frequently seasonal although not always.
    - Building is hot in the summer, cold in the winter.

  - Metrology's labs needed to be shut down in summer when interior building temperatures were too high. The high temperatures caused petroleum ether to boil in the labs.
  - Metrology is always cold. Winter freezing problems occur in Metrology.

- Air flow quality is not acceptable.
  - Lack of air flow in general makes it difficult to maintain comfortable environment.
  - Lab exhaust hoods do not capture fumes; fumes are drawn into the return ducts.
  - Tenant life safety at issue when ethyl ether boiled on the lab tables.
  - Diesel fumes have been a problem for Metrology in the past.

- Indoor air quality is not acceptable.
  - Although this condition was not currently observed or validated, mold growth has been a problem in the past.

- Electrical service to building is not acceptable.
  - Breakers are popping too often.
  - Secondary power distribution within building is under-sized.
  - Poor lighting in the building.

- Building density is too high.
  - Target density for each person is 220 gross square feet per person.

- Problems exist with the building infrastructure and systems.
  - Elevators are becoming problematic.
  - Membrane roof has reached or exceeded design life and becoming more and more of a problem.
  - Parking ramp has serious problems.

It is noted that the issues resulting from the existing HVAC and air quality systems in the Wallace Building are not the primary fault of the Wallace Building maintenance group. System limitations in the building mechanical systems are the core problem for existing HVAC system issues present in the building.

APPENDIX B

SCOPE OF WORK FOR REMODELING OPTIONS

APPENDIX C

ESTIMATE

APPENDIX D

ENVIRONMENTAL ASSESSMENT REPORT AND TEST RESULT DATA SHEETS

APPENDIX E

INDOOR AIR QUALITY REPORT

APPENDIX F

TESTING AND BALANCING REPORT

APPENDIX G

SKETCHES

146259-SK-ARCH-001	Partial Site Plan
146259-SK-ARCH-002	Modifications at Parking RAmp
146259-SK-ARCH-003, REV. 1	Proposed Layout for Previous Metrology Lab
146259-SK-ARCH-004	Plan—Infill of South Atrium
146259-SK-ARCH-005	Plan—At (Terrarium) Atrium – 2nd Level
146259-SK-ARCH-006	3rd Level Atrium Modifications
146259-SK-ARCH-007	(Untitled)
146259-SK-ARCH-008	Third Floor Plan – East Side
146259-SK-ARCH-009	Fourth Floor Plan – East Side
146259-SK-ARCH-010	Lobby Redesign
146259-SK-MECH-001	HVAC Roof Plan, Mechanical

APPENDIX B

SCOPE OF WORK FOR REMODELING OPTIONS

STATE OF IOWA WALLACE BLDG. EVALUATION

SECTION 01010

SUMMARY OF THE WORK

1.0 PART 1 - GENERAL

1.1 GENERAL BUILDING INFORMATION

A. Project Overview: **Wallace Building Evaluation**

B. Building Occupancy Type: **General Office Space, Assembly (Auditorium on 2nd Level and Conference Rooms on all levels)**

C. Construction Type of Building: **Type I-A**

D. Fire Suppression System**: Building is fully protected by a fire suppression system**

E. Height and Number of Stories of Building: **Five Stories (at 14' each) = 70', + 14' for Penthouse**

F. Changes Made to Floor Area and/or Occupant Loads: **(Must determine changes to be made in DCI and AG Lab areas) For HVAC calculations, 150 square feet/person has been assumed.**

1.2 GENERAL PROVISIONS

A. The conditions of the Construction Contract shall apply to the Work specified in this Section.

B. Contractor shall construct the specified Work strictly in accordance with the express requirements and the reasonable implications of the Contract Documents and to Owner's reasonable satisfaction.

C. Furnish labor, equipment and materials necessary to complete the Work specified herein under the “Description of Work” portion of this document and also as shown on the drawings included in this package.

D. The word “Provide” shall mean “furnish and install”.

E. Contractors shall prepare and maintain accurate redlined as-built drawings, including all the changes made during the progress of this project. At the completion of the work, the Contractor shall submit redlined as-builts to the Owner’s Designated Representative.

F. Any asbestos removal required shall be by Asbestos Contractor (refer to Specification 00812).

G. Field modifications are not permitted without prior notification and written approval of the Owner’s Designated Representative.

H. Cutting, patching or core drilling incidental to this Work shall be done by the specified Contractor as stated herein.

I. Construction/Equipment Staging Area for the project shall be agreed upon by the Owner's Designated Representative.

J. Contractor shall make a reasonable effort to prevent construction debris, noise, fumes, etc. from migrating to adjacent occupied work areas and leave work area clean. Where deemed necessary, temporary walls and/or screens shall be installed to assure this.

1.3 CLASSIFICATION OF BIDS

A. ~~A single~~ combined Lump Sum (Firm Price) Bid Proposal for the entire project will be received by Owner. The Lump Sum Proposal shall be for General Construction, Mechanical Work, Fire Protection Work and Electrical Work as defined in Division 1 through Division 16 of this Specification.

1. A segregation of the Lump Sum Proposal on the Bid Form shall be provided to Owner for information purposes only and will not be used to negotiate multiple contracts. Segregation shall consist of the following:
   a. General Construction Work - Division 0 through Division 14 of this Specification.
   b. Mechanical Construction Work - Division 15 of this Specification not including Fire Protection Work. Contractor shall also indicate on the Bid Form the name of the firm or Contractor who will perform the Mechanical Work.
   c. Fire Protection Work - Sections 15301, 15305, 15307, 15310, 15322 and 15323 only of Division 15 of this Specification. Contractor shall also indicate on the Bid Form the name of the firm or Contractor who will perform the Fire Protection Work.
   d. Electrical Construction Work - Division 16 of this Specification. Contractor shall also indicate on the Bid Form the name of the firm or Contractor who will perform the Electrical Work.
2. For Mechanical Construction Work (Division 15 of this Specification), the following Owner approved subcontractors may be available to furnish a quotation for this project:

3. For Fire Protection Work (Sections 15301, 15305, 15307, 15310, 15322 and 15323 only of Division 15 of this Specification), the following Owner approved subcontractors may be available to furnish a quotation for this project:

4. For Electrical Construction Work (Division 16 of this Specification), the following Owner approved subcontractors may be available to furnish a quotation for this project:

B. Refer to Section 01110 (verify Spec number) of this Specification for description of Alternates.

C. Refer to Section 01210 (verify Spec number) of this Specification for description of Allowances.

D. Refer to Section 01310 (verify Spec number) of this Specification for description of Unit Prices.

1.4 SEQUENCE OR PHASING OF WORK

A. Contractor shall sequence or phase all construction Work (refer to Drawing) to minimize interruptions and to allow Owner to maintain their business operation as usual and with a minimal of interference from construction Work activity. Work shall be completed in each area or phase prior to starting Work in adjacent areas or phases, except as approved by Owner. Work shall be conducted in the following phases and priorities:

1. Priority No. 1 shall consist of _____
2. Priority No. 2 shall consist of _____
3. Priority No. 3 shall consist of _____
4. Priority No. 4 shall consist of _____

1.5 BUILDING PERMIT

A. Contractor will obtain and pay for Building Permit(s) as required for all phases of Work under this Contract.

1.6 EQUIPMENT AND MATERIAL DELIVERY SCHEDULE

A. Within 2 weeks after award of Contract, Contractor shall furnish Owner with specific information regarding various equipment and materials (indicated within this Specification and as shown on Drawings), which are in short supply or requiring long periods for delivery (refer to Section 01510/01512 (verify Spec number) of this Specification for format to be used). This information will enable Owner to properly coordinate the Construction Progress Schedule (refer to Section 01610/01612 (verify Spec number) of this Specification) in such manner as to keep Contractor and Owner aware of delays that may alter the progress or completion of the project.

1.7 DAILY WORK SUMMARY

A. Contractor shall furnish Owner's Designated Representative with a daily work summary. The summary shall include a general outline of the Work accomplished for the day and the manpower distribution on the project according to classification of workmen. (Should this be modified to reflect a weekly schedule?)

1.8 OCCUPANCY AND USE OF EXISTING BUILDING

A. Owner will occupy and use portions of the existing building during the construction and/or remodeling period. (Verify that existing floors occupied with offices will remain during construction – and how to protect during the Work.) The construction and/or remodeling shall be conducted in a manner that will

permit the full and uninterrupted operation of areas of the facility. In the event that Owner determines an interruption of normal operations is unavoidable, Contractor shall Work in cooperation with Owner's Designated Representative in order to keep any interruption to a minimum. If interruption of normal operations is required, it shall be assumed for bidding purposes that all such Work will be accomplished during normal working hours.

1. Where cut-ins to existing services such as steam, condensate, water, compressed air, electric service, heat, telephone, and similar items are required, or where certain services are to be installed in any area, Contractor shall make these cut-ins or install such services only after receiving Owner's written permission and at an agreed upon time.

B. Contractor will have available for their use the Dock Area entrance(s) at the times designated by Owner's Designated Representative for the loading and unloading of construction material and equipment. No parking on Owner's access driveways will be allowed, except in designated parking areas as indicated. Movement of materials and equipment through the existing building shall be on rubber-tired trucks or platforms furnished by Contractor. Owner's equipment shall not be used by Contractor.

1. Contractor's personnel shall use the Dock Area employee entrance(s) as designated by Owner's Designated Representative.
2. Contractor's personnel shall visibly wear Owner's construction security badges, which will permit them to enter the existing building and construction Worksite areas only.
3. Access to other areas will be on a limited and a security controlled basis with no meandering allowed.

C. Contractual Work shall be conducted during the building's normal working hours (between the hours of 7 am and 5 pm), Monday through Friday of each week. If Contractor desires to perform Work at other times, then they shall make a special request to Owner at least 48 hours in advance. Owner shall have the right to grant or deny such a request.

D. Unless prior permission is obtained from Owner, Contractor shall not interfere in any way with the normal operation of the building and shall not block for any reason the entrances or exits of the buildings, ramps, driveways or parking lots and interior egress corridors. Contractor's materials, tools, supplies or debris shall not be allowed to accumulate in corridors, passageways, loading areas, driveways or similar areas. When an entrance, ramp, drive or corridor may require work, and be made unusable for a period of time, the Contractor shall provide at least one week’s notice to the Owner prior to start of work in the area. Temporary signage may be required to designate safe routes of egress.

E. All Contractors shall limit their use of the existing building to the areas to be remodeled and areas designated by Owner. Contractor's tools, equipment and material shall be stored within the areas to be remodeled or within such other areas authorized by Owner's Designated Representative. Tools and equipment shall be secured at the end of each shift and at the end of the day. If necessary, Contractor shall provide lockable ‘gang boxes’ for storage.

F. Contractor shall use suitable precautions to prevent damage to pipes, conduit, ducts and underground structures and utilities to remain. Contractor shall

carefully protect from disturbance or damage all monuments and property marks until Owner's authorized agent has witnessed or otherwise referenced their locations, and shall not remove them until directed by Owner.

1.9 MEASUREMENTS

A. Contractor shall provide the following surveying services by engaging a consulting engineering firm:
   1. Contractor shall lay out baselines based on the coordinate system as shown on Drawings. They shall also include all horizontal and vertical control and additional benchmarks as needed for construction based on the existing building floor elevation as shown on Drawings.
   2. Contractor shall set permanent control markers as shown on Drawings.
   3. Contractor shall layout their Work as shown on Drawings and all other requirements of their contract.
   4. Contractor shall verify the location and dimensions of existing Work, if any, that affect their Work or to which their Work is to be fitted.
   5. Contractor shall submit to Owner's Designated Representative documentation of the surveys, including a copy of field notes of all surveys.

B. The Prime Contractor shall layout the Work in accordance with Drawings, including all partitions and openings in partitions, floors and roofs. It is understood that all other Subcontractors involved in this project will rely on this layout in the performance of their Work. Therefore, the Prime Contractor agrees to indemnify and save harmless State of Iowa Consulting Architect/Engineer and Owner from all liability and expense arising out of or in connection with the Prime Contractor's negligent preparation of such layout.
   1. After the Prime Contractor has laid out their Work, all other Contractors and Subcontractors shall proceed to lay out their own Work.

C. Contractor shall maintain and preserve all temporary base lines and benchmarks until Owner consents to the removal of such lines and marks.

1.10 CHANGES TO DRAWINGS AND SPECIFICATIONS

A. Changes to the Drawings and Specifications may be made only in accordance with AIA A101 (Verify document number).

1.11 SOIL BORING DATA

A. A copy of the soils report shall be made available.

B. Owner shall not be held liable for Contractor's interpretation of the soils report, including soil boring logs and does not assume any liability for any conclusion Contractor may derive from the soils data and reports.

1.12 AS-BUILT (RECORD) DRAWINGS

A. Contractor shall prepare and maintain accurate record drawings of all mechanical and electrical underground concealed Work and shall submit these drawings to Owner upon final acceptance of Work or upon Owner's request. Drawings shall locate all underground piping and conduit by dimensions from

columns or structural grid lines and invert elevations. The same shall be done for any other concealed and inaccessible mechanical or electrical Work in the building.

B. Submit above as-built (record) drawings to Owner at completion of project and final acceptance of Work or upon Owner's request.

1.13 GENERAL CONSTRUCTION (DIVISIONS 1 THROUGH 14) PROVISIONS

A. General Description
1.

1.14 MECHANICAL CONSTRUCTION (DIVISION 15) PROVISIONS

A. Scope Of Work:
1.

1.15 FIRE PROTECTION WORK (DIVISION 15 PROVISIONS)

A. Scope Of Work:
1.

1.16 ELECTRICAL CONSTRUCTION (DIVISION 16) PROVISIONS

A. Scope Of Work:
1.

1.17 APPLICATION OF STANDARDS

A. Description: The following industry and design standards apply:
1. Civil/Structural/Architectural:
   a. AISC – American Institute of Steel Construction
   b. Iowa State Building Code - 1994 UBC
   c. ACI – American Concrete Institute
   d. AWS – American Welding Society
   e. ASTM – American Society for Testing and Materials
2. Equipment:
   a.
3. Mechanical:
   a. ASME – American Society of Mechanical Engineers
   b. IIAR – International Institute of Ammonia Refrigeration
   c. ASHRAE – American Society of Heating, Refrigeration, and Air Conditioning Engineers.
   d. ARI – American Refrigeration Institute.
   e. ANSI – American National Standards Institute.
4. Electrical and Controls
   a. IEEE – Institute of Electrical and Electronic Engineers
   b. IESNA – Illuminating Engineering Society of North America
   c. ISA – Instrument Society of America
   d. NBS – National Bureau of Standards (U.S.)
   e. NEC – National Electric Code
   f. NEMA – National Electrical Manufacturers Association
   g. NESC – National Electric Safety Code

h. NFPA – National Fire Protection Association
i. UL – Underwriter's Laboratories Inc
j. NECA – National Electrical Contractors Association.

1.18 SUGGESTED CONSTRUCTION SCHEDULE

A. To be determined by State of Iowa and Project Manager

1.19 LIST OF DRAWING PACKAGES

Drawing Numbers	Architectural/Engineering Firm	Date

2.0 PART 2 - DESCRIPTION OF SHORT TERM WORK

2.1 SITE

A. Grounds and Landscaping
1. Civil/Structural/Architectural – N/A
2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems – N/A

B. Parking Ramp (Short Term)
1. Civil/Structural/Architectural
a. Beams
1.) Shore two cracked beams at 10 ft. elevation.
2.) Maintain monitoring to verify condition of upper deck (by Owner).
b. Base Slab
1.)
c. Upper Deck
1.) Permanently block off upper deck from traffic.
2. Mechanical
a.
3. Electrical
a. Add lighting for security for ground floor of ramp. Power from MCC. Add 6 exterior wall packs on grid line A.
4. Low Voltage Systems – N/A

C. Sidewalks & Parking
1. Civil/Structural/Architectural
a. Add sidewalks through landscaping from Penn Avenue parking ramp 15 L.F. x 8' wide.
2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems – N/A

D. Infrastructure
1. Civil/Structural/Architectural – N/A

2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems – N/A

E. Utilities
1. Civil/Structural/Architectural
   a. Pad for transformers: Install two bases 8’ by 8’ each for oil-filled transformers, including dike for oil containment 10’ from building.
2. Mechanical – N/A
3. Electrical
   a. Purchase and install two new 2500 KVA transformers, oil-filled. The transformers in the electrical room must be moved outside and replaced with oil pad mounted transformers as the room is currently an electrical vault but is not set up for one per National Electrical Code.
4. Low Voltage Systems – N/A

2.2 BUILDING ENVELOPE

A. Roof
1. Civil/Structural/Architectural
   a. Repair 2nd Level membrane roofing 8,000 square foot of patch.
   b. Replace southwest stair skylight double dome (4' diameter).
   c. Repair roofing areas at HVAC equipment to be removed on 2nd level roof.
2. Mechanical
   a. Remove selected rooftop exhaust fans and small package units estimated quantity (15).
3. Electrical
   a. Remove electrical feeds to demo mechanical equipment back to source.
4. Low Voltage Systems
   a. No work required

B. Walls
1. Civil/Structural/Architectural (add alternate #1)
   a. Clean masonry walls
   b. Rebuild wall expansion joints
   c. Seal and caulk masonry walls
   d. Tuck point masonry walls
   e. Apply waterproofing sealant (two coats)
2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems – N/A

C. Glass (add alternate #2)
1. Civil/Structural/Architectural
   a. Seal leaking window gaskets (allowance of $30,000)
2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems – N/A

D. Entrances
1. Civil/Structural/Architectural
a. Install egress door in east wall of mechanical transformer room - double leaf door (2-4'-0" x 8'-0") with removable transom to 10'. Active door leaf, inactive with foot and head bolts with lockset.
2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems – N/A

2.3 BUILDING INTERIOR

A. Space Design
1. Civil/Structural/Architectural
a. Mechanical Room; Room 174, 175 and 176 (upgrade fire rating).
1.) Replace doors and frames with fire-rated doors at interior entrances of Mechanical Room 3'-0" x 7'-0" with lockset.
2.) Upgrade Mechanical Room walls to include metal studs with two layers 5/8" sheetrock.
3.) Apply fireproof sealants at all pipe and duct openings to/from Boiler Mechanical Room (allowance).
4.) Fur-out ceiling with metal studs and two layers of 5/8" sheetrock.
b. Atrium floor edges (Alternate #3)
1.) Modify floor edge balcony wall by demolition of railing.
2.) Install fire/smoke proof glass curtain wall system (allowance).
c. Lab Equipment
1.) Remove all existing counters, shelves, etc. from first and second floor lab areas.
2. Mechanical
a. Install two-hour smoke/fire dampers at duct openings through Boiler Mechanical Room. Quantity of four at 2 ft by 2 ft.
b. Install additional ventilation in the electrical transformer room (allowance $10k).
c. Reroute and insulate existing copper lines so they do not pass over electrical gear (allowance $4k).
d. Remove all lab vent hoods including exhaust duct, fans, and drains (assume hazardous demolition and disposal).
e. Install additional ventilation in the electrical transformer room
f. Install drip pans under the water lines above the primary switchgear to guarantee water will not drop into the switchgear.
3. Electrical
a. Install two additional 200 amp circuit breakers in the main electrical room on the first floor.
b. Restrict access to the electrical room to qualified personnel only.
c. Have circuit breakers on the main floors tested and replaced with larger panels. Estimated quantity of 4 (on four floors) 125 amp sub panels with 42 space panel boards added.
d. Remove old wiring in under-floor ducts to make room for new circuit wiring (allowance $10k).
e. Remove all chemicals from chemical storage area. Declassify the chemical storage area. Reclassify to general purpose.

f. There are unmarked circuit breakers in the HVAC room. These must be identified and marked for personnel protection (allowance $500).
g. Panel PP3 on the 3rd floor has unmarked circuit breakers. These must be identified and marked for personnel protection.
h. Panel P3C has unmarked circuit breakers. These must be identified and marked for personnel protection.
i. Panel C3A has unmarked circuit breakers. These must be identified and marked for personnel protection.
j. Panel L4A has unmarked circuit breakers. These must be identified and marked for personnel protection.
k. Fifth floor electrical panel has unmarked circuit breakers. These must be identified and marked for personnel protection.
l. Add one additional lighting panel on each floor (five total).
m. Remove and reinstall Panel 5-PB-1. Panel 5-PB-1 electrical panel is installed too high for use per the National Electrical Code, 1972 and later versions.

4. Low Voltage Systems – N/A

B. Walls
1. Civil/Structural/Architectural
a. Investigate wall envelope effectiveness by stripping selected areas of exterior walls to investigate for mould/mildew.
b. Patch and paint lab area walls.
2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems – N/A

C. Ceilings
1. Civil/Structural/Architectural
a. Remove and dispose of ceiling grid and panels for all first and second floor lab areas.
b. P&I new ceiling grid and tile (office grade) in lab areas.
2. Mechanical –
a. Remove and replace all HVAC duct and VAV boxes in lab areas first and second floor lab areas.
b. Remove and replace all sprinkler piping and heads in lab areas.
c. Remove all potable hot and cold water piping in lab areas.
d. Remove and replace all heating piping in lab areas.
e. Remove and replace all sanitary piping in ceiling of lab areas.
3. Electrical
a. Remove and replace all light fixtures in first and second floor lab areas.
b. Demo all small power conduit and conductors back to PDP sub panels in room.
4. Low Voltage Systems – N/A

D. Floors
1. Civil/Structural/Architectural
a. Remove sheet vinyl flooring on first and second floor lab areas. (Material is asbestos contaminated.)
b. P&I 2 by 2 carpet squares for first and second floor lab areas.

c. Remove and replace carpeting in DCI office area.

2. Mechanical
   a. Lab Area to Offices
      1.) Cap existing lab room floor drains (two per room).
3. Electrical
   a. Install at least two additional bus ducts through all floors of the building for additional computers.
4. Low Voltage Systems – N/A

E. Structure
1. Civil/Structural/Architectural
2. Mechanical
3. Electrical
4. Low Voltage Systems

2.4 BUILDING MECHANICAL

A. Utilities
1. Civil/Structural/Architectural
2. Mechanical
   a. Utilize existing water (potable and fire), sanitary sewer, storm sewer, natural gas, central plant steam, and central plant chilled water. No dollar impact.
3. Electrical
   a. Upgrade lockable disconnects to exterior HVAC equipment and add ground fault circuit breakers (quantity of 18).
4. Low Voltage Systems

B. Water
1. Civil/Structural/Architectural
2. Mechanical
   a.
3. Electrical
4. Low Voltage Systems

C. Sanitary Sewer
1. Civil/Structural/Architectural
2. Mechanical
3. Electrical
4. Low Voltage Systems

D. Storm Water
1. Civil/Structural/Architectural
2. Mechanical
3. Electrical
4. Low Voltage Systems

E. Chilled Water
1. Civil/Structural/Architectural
2. Mechanical
   a.
3. Electrical
4. Low Voltage Systems

F. Steam and Condensate
1. Civil/Structural/Architectural
2. Mechanical
a.
3. Electrical
4. Low Voltage Systems

G. Natural Gas
1. Civil/Structural/Architectural
2. Mechanical
a.
3. Electrical
4. Low Voltage Systems

H. Interior Plumbing
1. Civil/Structural/Architectural
2. Mechanical
a.
3. Electrical
4. Low Voltage Systems

I. Fire Protection
1. Civil/Structural/Architectural
2. Mechanical
3. Electrical
4. Low Voltage Systems

J. HVAC
1. Civil/Structural/Architectural
2. Mechanical
a. Provide new packaged VAV rooftop and air distribution system to increase supply airflow capacity. Capacity of cooling unit will be approximately 40 tons on fifth level roof, and 20 tons on second level roof for an additional 25,000 cfm of supply air (add alternate #3).
b. Revisions to existing air distribution system from Trane packaged VAV rooftop (add alternate #3).
c. Provide new hydronic hot water, perimeter fin tube radiation system along the southeast atrium glass exposure (add alternate #3).
d. Testing, adjusting, & balancing (TAB) of all existing AHUs, pumps, VAV boxes, heating coils, and all other terminal units.
3. Electrical
4. Low Voltage Systems

K. Facilities Management Control System (FMCS)
1. Civil/Structural/Architectural
2. Mechanical
a. Provide Siemens DDC control upgrades to replace pneumatic control components (Quote provided by Siemens via Prall).
b. Provide Siemens for add alternate #3 (Quote provided by Siemens via Prall).

3. Electrical
4. Low Voltage Systems

L. Electrical
1. Civil/Structural/Architectural
2. Mechanical
3. Electrical
4. Low Voltage Systems

2.5 BUILDING ELECTRICAL

A. Main
1. Civil/Structural/Architectural
2. Mechanical
3. Electrical
4. Low Voltage Systems

B. Distribution
1. Civil/Structural/Architectural
2. Mechanical
3. Electrical
a. Remove old wiring in under-floor ducts to make room for new circuits.
4. Low Voltage Systems

C. Lighting
1. Civil/Structural/Architectural
2. Mechanical
3. Electrical
4. Low Voltage Systems

D. Phone
1. Civil/Structural/Architectural
2. Mechanical
3. Electrical
4. Low Voltage Systems

E. P/A
1. Civil/Structural/Architectural
2. Mechanical
3. Electrical
4. Low Voltage Systems

F. Low Voltage Systems
1. Civil/Structural/Architectural
2. Mechanical
3. Electrical
4. Low Voltage Systems

3.0 PART 3 AND 4 - NOT APPLICABLE

END OF SECTION

APPENDIX C

ESTIMATE

HANSCOMB
Faithful & Gould

900 2nd Ave South, Suite 500
Minneapolis, MN 55402
Telephone 612.338.3120
Fax 612.338.3647
www.hanscombfgould.com
A member of the Atkins group of companies

Schematic Design Cost Estimate

WALLACE BUILDING EVALUATION
Short Term Repairs and Modifications
Des Moines, Iowa

AMEC Inc.
800 Marquette Avenue, Suite 1200
Minneapolis, MN 55402

December 15, 2004

WALLACE BUILDING EVALUATION
Short Term Repairs and Modifications
Des Moines, Iowa

Schematic Design Cost Estimate

INTRODUCTION

Project Description

In brief, the project comprises short term repairs and modifications to the Wallace Building, Des Moines, Iowa. These repairs and modifications are understood to be the minimum work necessary.

This document is based on the measurement and pricing of quantities wherever information is provided and/or reasonable assumptions for other works not covered in the drawings and programs as stated in this document. The unit rates reflected herein have been obtained from historical records and discussion with subcontractors and suppliers. All unit rates relevant to subcontractor works include the subcontractors' overheads and profit.

Documentation

Hanscomb Faithful & Gould received the following documents from the Architect/Engineer for the preparation

Copies of original Construction drawings

State of Iowa Wallace Building Evaluation: Section 01011 Summary of Work

Items excluded from the Cost Estimate

Legal and accounting fees
Fire and all risk insurance
Construction contingency
Owner's contingency
Loose furniture, fittings and equipment (FF&E)
Moving costs
Window Treatments
Commissioning

HANSCOMB
Faithful&Gould

Schematic Design Cost Estimate
12/15/2004

WALLACE BUILDING EVALUATION
Short Term Repairs and Modifications

EXECUTIVE SUMMARY

SITE				**168,900**
BUILDING ENVELOPE				**14,500**
BUILDING INTERIOR				**74,655**
BUILDING MECHANICAL				**148,500**
BUILDING ELECTRICAL				**39,350**
SUBTOTAL				**445,905**
MARK-UP				
General Conditions/insurance/bond/permits	9.00%	of	445,905	40,131
CM/GC Fee	4.00%	of	486,036	19,441
Architect/Engineer Design Fee	12.00%	of	505,478	60,657
SUBTOTAL				**566,135**
CONTINGENCIES/ESCALATION				
Design Contingency	10.00%	of	566,135	56,614
Escalation (Excluded)				
Construction Contingency (Excluded)				
Owner's Contingency (Excluded)				
CONSTRUCTION TOTAL				**622,749**

HANSCOMB Faithful&Gould

Schematic Design Cost Estimate

WALLACE BUILDING EVALUATION
Short Term Repairs and Modifications

ESTIMATE SUMMARY

		Total excl. markup	Total incl markup	% of Total
SITE				
Grounds and Landscaping		-		
Parking Ramp (Short Term)		2,150	3,003	
Sidewalks and Parking		-	0	
Utilities		166,750	232,882	
		168,900	**235,885**	**37.9%**
BUILDING ENVELOPE				
Roof		12,000	16,759	
Walls		-	0	
Glass		-	0	
Entrances		2,500	3,491	
		14,500	**20,251**	**3.3%**
BUILDING INTERIOR				
Space Design		64,655	90,297	
Walls		-	0	
Ceilings		-	0	
Floors		-	0	
Structure		-	0	
DCI Firing Range		10,000	13,966	
		74,655	**104,263**	**16.7%**
BUILDING MECHANICAL				
Utilities		6,000	8,380	
Water		-	0	
Sanitary Sewer		-	0	
Storm Water		-	0	
Chilled Water		-	0	
Steam and Condensate		-	0	
Natural Gas		-	0	
HVAC		142,500	199,015	
		148,500	**207,394**	**33.3%**
BUILDING ELECTRICAL				
Main		-	0	
Distribution		39,350	54,956	
Lighting		-	0	
Phone		-	0	
P/A		-	0	
Low Voltage Systems		-	0	
		39,350	**54,956**	**8.8%**
SUB-TOTAL		**445,905**	**622,749**	**100%**
MARK-UP				
General Conditions/insurance/bond/permits	9.00%	40,131		
CM/GC Fee	4.00%	19,441		
Architect/Engineer Design Fee	12.00%	60,657		
SUBTOTAL		**566,135**		
CONTINGENCIES/ESCALATION				
Design Contingency	10.00%	56,614		
Escalation	0.00%	0		
CONSTRUCTION TOTAL		**622,749**		

WALLACE BUILDING EVALUATION
Short Term Repairs and Modifications
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	SubTotal $	Total $
2.1	**SITE**					
2.1.A	Grounds and Landscaping					
2.1.A.1	Civil/Structural/Architectural - N/A				-	
2.1.A.2	Mechanical - N/A				-	
2.1.A.3	Electrical -N/A				-	
2.1.A.4	Low Voltage Systems - N/A				-	
	Subtotal Grounds and Landscaping					-
2.1.B	Parking Ramp (Short Term)					
2.1.B.1	Civil/Structural/Architectural					
2.1.B.1.a.1	Beams - Shore two cracked beams at 10ft elevation	2	ea	450.00	900	
2.1.B.1.a.2	Beams - Maintain monitoring to verify condition of Upper Deck (by Owner)				-	
2.1.B.1.c.1	Upper Deck - Permanently block off upper deck from traffic	1	ea	1,250.00	1,250	
2.1.B.2	Mechanical - N/A				-	
2.1.B.3	Electrical				-	
	No work				-	
2.1.B.4	Low Voltage Systems - N/A				-	
	Subtotal Parking Ramp (Short Term)					2,150
2.1.C	Sidewalks and Parking					
2.1.C.1	Civil/Structural/Architectural				-	
2.1.C.1.a	No work				-	
2.1.C.2	Mechanical - N/A				-	
2.1.C.3	Electrical -N/A				-	
2.1.C.4	Low Voltage Systems - N/A				-	
	Subtotal Sidewalks and Parking					-
2.1.D	Infrastructure					
2.1.D.1	Civil/Structural/Architectural - N/A				-	
2.1.D.2	Mechanical - N/A				-	
2.1.D.3	Electrical -N/A				-	
2.1.D.4	Low Voltage Systems - N/A				-	
	Subtotal Infrastructure					-
2.1.E	Utilities					
2.1.E.1	Civil/Structural/Architectural				-	
2.1.E.1.a	Install four 8' by 8' transformer pads, including dikes for oil containment	4	ea	6,300.00	25,200	
2.1.E.2	Mechanical - N/A				-	
2.1.E.3	Electrical -N/A				-	
2.1.E.3.a	P&I two new 2000kVA oil-filled transformers	2	ea	35,000.00	70,000	
2.1.E.3.b	P&I #1 copper AWG 15kV cables in 4" conduit	150	lf	100.00	15,000	
2.1.E.3.c	P&I two (2) new 1200 amp 15KV bus fused disconnects	2	ea	16,000.00	32,000	
2.1.E.3d	P&I seven (7) 4" conduits each containing four (4) 500kcmil 600 volt copper cables	350	lf	33.00	11,550	
2.1.E.3.e	P&I two (2) 5" conduits with 500kcmil copper 15KV cable 100 feet from new fused 15KV disconnects to existing switchgear	200	lf	65.00	13,000	
2.1.E.4	Low Voltage Systems - N/A				-	
	Subtotal Utilities					166,750
	SUBTOTAL SITE					**168,900**
2.2	**BUILDING ENVELOPE**					
2.2.A	Roof					
2.2.A.1	Civil/Structural/Architectural				-	
2.2.A.1.a	Repair 2nd level membrane roof, maintenance allowance	1	ls	10,000.00	10,000	
2.2.A.1.b	Replace southwest skylight double dome, 4' diameter	1	ea	2,000.00	2,000	
2.2.A.2	Mechanical				-	
2.2.A.2.a	No work					
2.2.A.3	Electrical				-	
2.2.A.3.a	No work					
2.2.A.4	Low Voltage Systems - N/A				-	
	Subtotal Roof					12,000
2.2.B	Walls					

WALLACE BUILDING EVALUATION
Short Term Repairs and Modifications
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	SubTotal $	Total $
2.2.B.1	Civil/Structural/Architectural (see Add Alternate #1)				-	
2.2.B.2	Mechanical - N/A				-	
2.2.B.3	Electrical -N/A				-	
2.2.B.4	Low Voltage Systems - N/A				-	
	Subtotal Walls					-
2.2.C	Glass					
2.2.C.1	Civil/Structural/Architectural (see Add Alternate #2)				-	
2.2.C.2	Mechanical - N/A				-	
2.2.C.3	Electrical -N/A				-	
2.2.C.4	Low Voltage Systems - N/A				-	
	Subtotal Glass					-
2.2.D	Entrances					
2.2.D.1	Civil/Structural/Architectural				-	
2.2.D.1.a	Install egress door in East wall of Mechanical Transformer Room	1	ea	2,500.00	2,500	
2.2.D.2	Mechanical - N/A				-	
2.2.D.3	Electrical -N/A				-	
2.2.D.4	Low Voltage Systems - N/A				-	
	Subtotal Entrances					2,500
	SUBTOTAL BUILDING ENVELOPE					**14,500**
2.3	**BUILDING INTERIOR**					
2.3.A	Space Design					
2.3.A.1	Civil/Structural/Architectural				-	
2.3.A.1.a.1	Mech Room 174, 175, 176: Replace doors and frames with fire rated	3	ea	1,250.00	3,750	
2.3.A.1.a.2	Mech Room 174, 175, 176: Upgrade walls with metal studes and two layers 5/8" sheetrock	990	sf	5.50	5,445	
2.3.A.1.a.3	Mech Room 174, 175, 176: Apply fire proof sealants at all pipe and duct openings	1	ls	3,000.00	3,000	
2.3.A.1.a.4	Mech Room 174, 175, 176: Fir out ceiling with metal studs and two layers sheetrock	910	sf	6.00	5,460	
2.3.A.1.b.1	Atrium Floor edges: (see Add Alternate #3)					
2.3.A.1.c.1	No work				-	
2.3.A.2	Mechanical				-	
2.3.A.2.a	Install four (4) two-hour smoke/fire dampers at duct openings through Boiler Mechanical Room	4	ea	1,000.00	4,000	
2.3.A.2.b	Install two-hour smoke/fire dampers at duct openings through Boiler Mechanical Room	1	ls	10,000.00	10,000	
2.3.A.2.c	Reroute and insulate existing copper lines so they do not pass over electrical gear	1	ls	4,000.00	4,000	
2.3.A.2.d	No work					
2.3.A.2.e	Install additional ventilation in the electrical transformer room	1	ls	25,000.00	25,000	
2.3.A.2.f	Install drip pans under water lines above primary switchgear	1	ls	3,000.00	3,000	
2.3.A.3	Electrical				-	
2.3.A.3.a	Remove all chemicals form Chemical Storage area. Reclassify area	1	ls	1,000.00	1,000	
2.3.A.4	Low Voltage Systems - N/A					
	Subtotal Space Design					64,655
2.3.B	Walls					
2.3.B.1	Civil/Structural/Architectural - N/A				-	
2.3.B.2	Mechanical - N/A				-	
2.3.B.3	Electrical -N/A				-	
2.3.B.4	Low Voltage Systems - N/A				-	
	Subtotal Walls					-
2.3.C	Ceilings					
2.3.C.1	Civil/Structural/Architectural - N/A				-	
2.3.C.2	Mechanical - N/A				-	
2.3.C.3	Electrical -N/A				-	
2.3.C.4	Low Voltage Systems - N/A				-	
	Subtotal Ceilings					-
2.3.D	Floors					

WALLACE BUILDING EVALUATION
Short Term Repairs and Modifications
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	SubTotal $	Total $
2.3.D.1	Civil/Structural/Architectural - N/A				-	
2.3.D.2	Mechanical - N/A				-	
2.3.D.3	Electrical -N/A				-	
2.3.D.4	Low Voltage Systems - N/A				-	
	Subtotal Floors					-
2.3.E	Structure					
2.3.E.1	Civil/Structural/Architectural - N/A				-	
2.3.E.2	Mechanical - N/A				-	
2.3.E.3	Electrical -N/A				-	
2.3.E.4	Low Voltage Systems - N/A				-	
	Subtotal Structure					-
2.3.F	DCI Firing Range					
2.3.F.1	Civil/Structural/Architectural				-	
2.3.F.1.a	Lead Abatement	1	ls	10,000.00	10,000	
2.3.F.2	Mechanical - N/A				-	
2.3.F.3	Electrical -N/A				-	
2.3.F.4	Low Voltage Systems - N/A				-	
	Subtotal DCI Firing Range					10,000
	SUBTOTAL BUILDING INTERIOR					**74,655**
2.4	**BUILDING MECHANICAL**					
2.4.A	Utilities					
2.4.A.1	Civil/Structural/Architectural - N/A				-	
2.4.A.2	Mechanical				-	
2.4.A.2.a	Utilize existing water, sanitary sewer, storm sewer, natural gas, central plant steam and central plant chilled water				-	
2.4.A.3	Electrical				-	
2.4.A.3.a	Upgrade to three lockable disconnects to exterior HVAC equipment and add ground fault circuit breakers	1	ls	6,000.00	6,000	
2.4.A.4	Low Voltage Systems - N/A				-	
	Subtotal Utilities					6,000
2.4.B	Water					
2.4.B.1	Civil/Structural/Architectural - N/A				-	
2.4.B.2	Mechanical - N/A				-	
2.4.B.3	Electrical -N/A				-	
2.4.B.4	Low Voltage Systems - N/A				-	
	Subtotal Water					-
2.4.C	Sanitary Sewer					
2.4.C.1	Civil/Structural/Architectural - N/A				-	
2.4.C.2	Mechanical - N/A				-	
2.4.C.3	Electrical -N/A				-	
2.4.C.4	Low Voltage Systems - N/A				-	
	Subtotal Sanitary Sewer					-
2.4.D	Storm Water					
2.4.D.1	Civil/Structural/Architectural - N/A				-	
2.4.D.2	Mechanical - N/A				-	
2.4.D.3	Electrical -N/A				-	
2.4.D.4	Low Voltage Systems - N/A				-	
	Subtotal Storm Water					-
2.4.E	Chilled Water					
2.4.E.1	Civil/Structural/Architectural - N/A				-	
2.4.E.2	Mechanical - N/A				-	
2.4.E.3	Electrical -N/A				-	
2.4.E.4	Low Voltage Systems - N/A				-	
	Subtotal Chilled Water					-
2.4.F	Steam and Condensate					
2.4.F.1	Civil/Structural/Architectural - N/A				-	
2.4.F.2	Mechanical - N/A				-	

WALLACE BUILDING EVALUATION
Short Term Repairs and Modifications
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	SubTotal $	Total $
2.4.F.3	Electrical -N/A				-	
2.4.F.4	Low Voltage Systems - N/A				-	
	Subtotal Steam and Condensate					-
2.4.G	Natural Gas					
2.4.G.1	Civil/Structural/Architectural - N/A				-	
2.4.G.2	Mechanical - N/A				-	
2.4.G.3	Electrical -N/A				-	
2.4.G.4	Low Voltage Systems - N/A				-	
	Subtotal Natural Gas					-
2.4.H	HVAC					
2.4.H.1	Civil/Structural/Architectural - N/A				-	
	Replace ceiling for access to hot water heating systems	5	ea	1,500.00	7,500	
2.4.H.2	Mechanical - (see Add Alternate #3)				-	
2.4.H.2.a	Revise supply air diffusers and return grille components	100	ea	200.00	20,000	
2.4.H.2.b	Replace control valves, pumps and flow measuring devices to the five hot water heating systems	5	ea	10,000.00	50,000	
2.4.H.2.c	Leave in place existing air distribution system					
2.4.H.2.d	Testing, adjusting and balancing of all existing AHU's, pumps, VAV boxes, heating coils and all other terminal units	1	ls	50,000.00	50,000	
2.4.H.2.e	Provide "Operations and Maintenance Training/Workshop	1	ls	5,000.00	5,000	
2.4.H.3	Electrical				-	
2.4.H.3.a	Modify wiring for relocation of ten pumps	1	ls	10,000.00	10,000	
2.4.H.4	Low Voltage Systems - N/A				-	
	Subtotal HVAC					142,500
	SUBTOTAL BUILDING MECHANICAL					**148,500**
2.5	**BUILDING ELECTRICAL**					
2.5.A	Main					
2.5.A.1	Civil/Structural/Architectural - N/A				-	
2.5.A.2	Mechanical - N/A				-	
2.5.A.3	Electrical -N/A				-	
2.5.A.4	Low Voltage Systems - N/A				-	
	Subtotal Main					-
2.5.B	Distribution					
2.5.B.1	Civil/Structural/Architectural - N/A				-	
2.5.B.2	Mechanical - N/A				-	
2.5.B.3	Electrical -N/A				-	
2.5.B.3.a	Modify electrical switchgear in electrical room to permit removal of existing dry transformers	1	ls	5,000.00	5,000	
2.5.B.3.b	Remove old dry transformers	1	ls	5,000.00	5,000	
2.5.B.3.c	Install two additional 200A circuit breakers in Electrical Room	2	ea	2,500.00	5,000	
2.5.B.3.d	Restrict access to the Electrical Room to Qualified personnel	1	ls	350.00	350	
2.5.B.3.e	Test main circuit breakers and replace with larger panels	1	ls	16,000.00	16,000	
2.5.B.3.f	Identify and mark circuit breakers in HVAC Room	1	ls	1,000.00	1,000	
2.5.B.3.g	Identify and mark circuit breakers in Panel PP3	1	ls	1,000.00	1,000	
2.5.B.3.h	Identify and mark circuit breakers in Panel P3C	1	ls	1,000.00	1,000	
2.5.B.3.I	Identify and mark circuit breakers in Panel C3A	1	ls	1,000.00	1,000	
2.5.B.3.j	Identify and mark circuit breakers in Panel L4A	1	ls	1,000.00	1,000	
2.5.B.3.k	Identify and mark circuit breakers in 5th floor Panel	1	ls	1,000.00	1,000	
2.5.B.3.l	No work				-	
2.5.B.3.m	Remove and install panel 5-PB-1	1	ls	2,000.00	2,000	
2.5.B.3.n	No work				-	
					-	
2.5.B.4	Low Voltage Systems - N/A				-	
	Subtotal Distribution					39,350
2.5.C	Lighting					
2.5.C.1	Civil/Structural/Architectural - N/A				-	
2.5.C.2	Mechanical - N/A				-	
2.5.C.3	Electrical -N/A				-	
2.5.C.4	Low Voltage Systems - N/A				-	
	Subtotal Lighting					-

WALLACE BUILDING EVALUATION
Short Term Repairs and Modifications
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	SubTotal $	Total $
2.5.D	Phone					
2.5.D.1	Civil/Structural/Architectural - N/A				-	
2.5.D.2	Mechanical - N/A				-	
2.5.D.3	Electrical -N/A				-	
2.5.D.4	Low Voltage Systems - N/A				-	
	Subtotal Phone					-
2.5.E	P/A					
2.5.E.1	Civil/Structural/Architectural - N/A				-	
2.5.E.2	Mechanical - N/A				-	
2.5.E.3	Electrical -N/A				-	
2.5.E.4	Low Voltage Systems - N/A				-	
	Subtotal P/A					-
2.5.F	Low Voltage Systems					
2.5.F.1	Civil/Structural/Architectural - N/A				-	
2.5.F.2	Mechanical - N/A				-	
2.5.F.3	Electrical -N/A				-	
2.5.F.4	Low Voltage Systems - N/A				-	
	Subtotal Low Voltage Systems					-
	SUBTOTAL BUILDING ELECTRICAL					**39,350**

WALLACE BUILDING EVALUATION
Short Term Repairs and Modifications
Des Moines, Iowa

Schematic Design Cost Estimate

QUALIFICATIONS AND PRICING NOTES

Basis of Pricing

Pricing shown reflects probable construction costs obtainable in the Des Moines, Iowa area on the date of this statement of probable costs. This estimate is a determination of fair market value for the construction of this project. Pricing assumes competitive bidding for every portion of the construction work for all subcontractors, that is to mean 4 to 5 bids. If fewer bids are received, bid results can be expected to be higher.

Subcontractor's markups have been included in each line item unit price. These markups cover the cost of field overhead, home office overhead, and profit. These markups can range from 5% to 15% of the cost for that particular item of work. The rates that have been established are for budgetary purposes only and are not to be used to establish the cost of additions or deletions to the scope of work that may arise during the actual construction process.

General Contractors General Conditions, overhead and profit are calculated at 13%.

Design Contingency

A 10% design/estimating contingency has been included in the estimate, the proposed revisionss are considered to be conceptual/schematic in nature. This contingency should be reduced to zero at bid stage, but the monies identified are likely to be absorbed in the detail "above-the-line".

Escalation

Allowances included within this estimate are of a budgetary nature, for this reason we have not applied an escalation factor to reflect out-turn cost.

Items that may affect the cost estimate

Modifications to the scope of work included in this estimate.
Special phasing requirements.
Restrictive technical specifications or excessive contract conditions.
Any other non-competitive bid situations.
Bids delayed beyond the projected schedule.

Statements of Probable Cost

Hanscomb Faithful & Gould has no control over the cost of labor and materials, general contractor's or any subcontractor's method of determining prices, or competitive bidding and market conditions. This opinion of probable cost of construction is made on the basis of the experience, qualifications, and best judgment of the professional consultant familiar with the construction industry. HF&G cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from this or subsequent cost estimates.

HF&G's staff of professional cost consultants has prepared this estimate in accordance with generally accepted principles and practices. This staff is available to discuss its contents with interested personnel. Due to the nature of the works, and the extensive amount of hazardous materials to be removed, we would anticipate that this estimate be accurate to +15%/-25%.

Recommendation for Cost Control

Hanscomb Faithful & Gould recommends that the Owner carefully review this document, including line item descriptions, unit prices, clarifications, exclusions, inclusions and assumptions, contingencies, escalation and markups. If the project is over budget, or if there are unresolved budgeting issues, alternate schemes should be evaluated before proceeding into the design phase.

HANSCOMB
Faithful & Gould

Schematic Design Cost Estimate

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

900 2nd Ave South, Suite 500
Minneapolis, MN 55402
Telephone 612.338.3120
Fax 612.338.3647
www.hanscombfgould.com
A member of the Atkins group of companies

AMEC Inc.
800 Marquette Avenue, Suite 1200
Minneapolis, MN 55402

December 15, 2004

HANSCOMB
Faithful&Gould

December 15, 2004

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

Schematic Design Cost Estimate

INTRODUCTION

Project Description

In brief, the project comprises a long term remodel to the Wallace Building, Des Moines, Iowa. This remodel is intended to convert the first and second floor lab areas into office space, and fully update all other existing floors. In addition the estimate includes a full replacement of the exterior envelope of the building.

This document is based on the measurement and pricing of quantities wherever information is provided and/or reasonable assumptions for other works not covered in the drawings and programs as stated in this document. The unit rates reflected herein have been obtained from historical records and discussion with subcontractors and suppliers. All unit rates relevant to subcontractor works include the subcontractors' overheads and profit.

Documentation

Hanscomb Faithful & Gould received the following documents from the Architect/Engineer for this cost estimate

Copies of original construction drawings

State of Iowa Wallace Building Evaluation: Section 01011 Summary of Work

Architectural Sketches No's 001 through 010

Mechanical Sketch No. 001

Items excluded from the Cost Estimate

Legal and accounting fees
Fire and all risk insurance
Construction contingency
Owner's contingency
Loose furniture, fittings and equipment (FF&E)
Moving costs
Window Treatments
Commissioning

HANSCOMB
Faithful&Gould

December 15, 2004

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

Schematic Design Cost Estimate

INTRODUCTION

Complete Demolition and Rebuild

Should the Owner opt for the complete demolition of the Wallace Building, and the construction of a replacement structure then the cost is likely to be in the region of:

	$ Range
Demolition	$500,000 - $1,000,000
New Class B Office	$40,500,000 - $47,250,000
Total	$41,000,000 - $48,250,000

The new office construction costs are based upon a conventional structure with a 250,000 gsf, and include an 8% allowance for Design Fees.

HANSCOMB Faithful&Gould

Schematic Design Cost Estimate
12/15/2004

WALLACE BUILDING EVALUATION
Long Term Work

EXECUTIVE SUMMARY

SITE				**825,658**
BUILDING ENVELOPE				**7,521,861**
BUILDING INTERIOR				**7,972,926**
BUILDING MECHANICAL				**4,515,000**
BUILDING ELECTRICAL				**2,313,000**
SUBTOTAL				**23,148,444**
MARK-UP				
General Conditions/insurance/bond/permits	9.00%	of	23,148,444	2,083,360
CM/GC Fee	4.00%	of	25,231,804	1,009,272
Architect/Engineer Design Fee	8.00%	of	26,241,076	2,099,286
SUBTOTAL				**28,340,362**
CONTINGENCIES/ESCALATION				
Design Contingency	10.00%	of	28,340,362	2,834,036
Escalation (Excluded)				
Construction Contingency (Excluded)				
Owner's Contingency (Excluded)				
CONSTRUCTION TOTAL				**31,174,398**

HANSCOMB Faithful&Gould

Schematic Design Cost Estimate

WALLACE BUILDING EVALUATION
Long Term Work

ESTIMATE SUMMARY

		Total excl. markup	Total incl markup	% of Total
SITE				
Grounds and Landscaping		45,000	60,602	
Parking Ramp		732,158	986,009	
Sidewalks & Parking		23,500	31,648	
Utilities		25,000	33,668	
		825,658	**1,111,927**	**3.6%**
BUILDING ENVELOPE				
Roof		964,861	1,299,394	
Walls		6,505,000	8,760,393	
Entrances		52,000	70,029	
		7,521,861	**10,129,816**	**32.5%**
BUILDING INTERIOR				
Lab Area to Offices		2,820,600	3,798,549	
First and Second Floor Existing Office Areas		302,270	407,072	
Restrooms		945,000	1,272,647	
Janitor's Closets		10,050	13,535	
Utility Chases		594,400	800,488	
Metrology Lab Area Conversion		345,500	465,291	
Existing Dock Area		65,780	88,587	
South Atrium (in office area)		118,650	159,788	
Terrarium Atrium (at plants and pond)		330,576	445,192	
Southeast Atrium (lobby area)		352,650	474,920	
Third, Fourth, Fifth Floors		1,202,450	1,619,360	
Elevators		530,000	713,760	
Stair Railings		143,200	192,850	
Main Lobby Vestibule		61,800	83,227	
Tactile (Directional and Informational) Signage		150,000	202,008	
		7,972,926	**10,737,273**	**34.4%**
BUILDING MECHANICAL				
Fire Protection Sprinkler System		400,000	538,687	
HVAC		3,530,000	4,753,910	
Facilities Management Control System (FMCS)		510,000	686,826	
Testing and Balancing		75,000	101,004	
Commissioning		-	0	
		4,515,000	**6,080,426**	**19.5%**
BUILDING ELECTRICAL				
Main		215,000	289,544	
Distribution		273,000	367,654	
Lighting		575,000	774,362	
Phone		500,000	673,358	
P/A		100,000	134,672	
Low Voltage Systems		650,000	875,366	
		2,313,000	**3,114,956**	**10.0%**
SUB-TOTAL		**23,148,444**	**31,174,398**	**100%**
MARK-UP				
General Conditions/insurance/bond/permits	9.00%	2,083,360		
CM/GC Fee	4.00%	1,009,272		
Architect/Engineer Design Fee	8.00%	2,099,286		
SUBTOTAL		**28,340,362**		
CONTINGENCIES/ESCALATION				
Design Contingency	10.00%	2,834,036		
Escalation	0.00%	0		
CONSTRUCTION TOTAL		**31,174,398**		

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	Subtotal $	Total $
3.1	**SITE**					
3.1.A	Grounds and Landscaping					
3.1.A.1	Civil/Structural/Architectural - N/A					
3.1.A.1.a	P&I planters and decorative barriers to improve exterior building security. (Six planters, triangular shaped.) See sketch SK_ARCH-01	6	ea	5,000.00	30,000	
3.1.A.2	Mechanical					
	Add two 3/4" hose bibs 100' from building to provide watering for planters. Provide piping and valves for winter drainage.	1	ls	3,000.00	3,000	
3.1.A.3	Electrical					
3.1.A.3.a	Add eighteen light fixtures located in the two planters.	1	ls	12,000.00	12,000	
3.1.A.4	Low Voltage Systems - N/A					
	Subtotal Grounds and Landscaping					45,000
3.1.B.	Parking Ramp					
3.1.B.1	Civil/Structural/Architectural					
3.1.B.1.a	Demo entire upper level including most of beams and columns	1	ls	215,000.00	215,000	
3.1.B.1.b	Remove Lower Level pavements, over-excavate, and install 24"of clean, granular, compacted backfill, and replace pavements	21,250	sf	16.15	343,188	
3.1.B.1.c	P&I parking striping as required	50	ea	10.00	500	
3.1.B.1.d	Add elevated walkway from 9th Street to rear of building at Auditorium Lobby	1	ls	50,000.00	50,000	
3.1.B.1.e	Add new stairs and landing at 2nd level off of exit door on north wall near Grid G/11	1	ls	18,000.00	18,000	
3.1.B.1.f	Demo & install new parking entrance from Locust (to prevent storm water into parking area)	1	ls	12,000.00	12,000	
3.1.B.1.g	Remove and replace parking retaining walls - north and east sides	335	lf	42.00	14,070	
3.1.B.1.h	See Building Envelope Section 3.2 for modification of previous DCI Lab entrances					
3.1.B.1.I	Furnish and install 12 concrete light post foundations and bases 2 feet in diameter and 6 feet in total length buried 4 feet in ground.	12	ea	450.00	5,400	
3.1.B.1.j	Add bases for card reader and gate	1	ls	5,000.00	5,000	
3.1.B.2.	Mechanical					
3.1.B.2.a	Add trench drain from Lower Court area to basin. (Estimated 75 feet in length)	1	ls	10,000.00	10,000	
3.1.B.2.b	Demo existing catch basins	1	ls	2,000.00	2,000	
3.1.B.2.c	Add four new catch basins, average length to utility tie of 50'	1	ls	10,000.00	10,000	
3.1.B.3	Electrical					
3.1.B.3.a	Furnish and install lighting to parking ramp - 12 classic style aluminum light posts with metal halide lights.	12	ea	3,500.00	42,000	
3.1.B.4	Low Voltage Systems					
3.1.B.4.a	Furnish and install a card reader at entrance to parking lot, and a 1-inch conduit including two single pair cables from card reader to communications room, approx. 80 feet in length.	1	ls	5,000.00	5,000	
	Subtotal Parking Ramp					732,158
3.1.C.	Sidewalks & Parking					
3.1.C.1	Civil/Structural/Architectural					
3.1.C.1.a	At intersection ofDes Moine and Pennsylvania, add ramp off sidewalk to landing with new employee double door entrance (6' by 7') at NW corner of building. See sketch SK-ARCH-03. (Previous Metrology area)	1	ls	3,000.00	3,000	
3.1.C.1.b	Remove and replace dock area paving with 8" concrete	1	ls	6,000.00	6,000	
3.1.C.1.c	Add new entrance stair to the West Elevation of the Metrology area	1	ls	7,000.00	7,000	
3.1.C.2	Mechanical					
3.1.C.2.a	No work				-	
3.1.C.3	Electrical					
3.1.C.3.a	Add six 250-watt metal halide lighting fixtures at new personnel entrance and dock.	1	ls	7,500.00	7,500	
3.1.C.4.	Low Voltage Systems					
	Subtotal Sidewalks & Parking					23,500
3.1.D	Utilities					
3.1.D.1	Civil/Structural/Architectural					
3.1.D.2	Mechanical-Use existing services:					
3.1.D.2.a	Potable Water					
3.1.D.2.b	Fire Protection Water					
3.1.D.2.c	Sanitary sewer					
3.1.D.2.d	Storm sewer					

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	Subtotal $	Total $
3.1.D.2.e	Natural gas					
3.1.D.2.f	Chilled water					
3.1.D.2.g	High-pressure steam and low-pressure condensate return					
3.1.D.3	Electrical-Use existing services					
3.1.D.3.a	P&I u/g feed from electrical room to new electrical core south of K/13 in East wing	1	ls	25,000.00	25,000	
3.1.D.3.b	High voltage feed to the building to be revised outside the scope of this document					
3.1.D.3.c	Emergency generation for this building to be revised outside the scope of this study					
3.1.D.4	Low Voltage Systems					
	Subtotal Utilities					25,000
	SUBTOTAL SITE					**825,658**
3.2	**BUILDING ENVELOPE**					
3.2.A	Roof					
3.2.A.1	Civil/Structural/Architectural					
3.2.A.1.a	Green House (West Wing - South Side): Remove existing glass roof system; install framing, insulated infill, and cover with metal standing seam roof.	1,026	sf	48.00	49,248	
3.2.A.1.b	Remove and replace existing roof (at third and sixth levels) with fully-adhered membrane roof. Demo and install new roof insulation system.	61,650	sf	13.25	816,863	
3.2.A.1.c	Repair roofing structure at HVAC equipment to be removed	15	ea	1,500.00	-	
3.2.A.2	Mechanical					
3.2.A.2.a	Revise roof drainage system for new roofing, remodeling 20 existing drains.	1	ls	25,000.00	25,000	
3.2.A.2.b	Add four new drains with piping (50' allowance each).	1	ls	10,000.00	10,000	
3.2.A.2.c	Remove selected rooftop exhaust fans and small package units	15	ea	2,500.00	37,500	
3.2.A.3	Electrical					
3.2.A.3.a	Remove electrical feeds to demo mechanical equipment back to source	15	ea	1,750.00	26,250	
3.2.A.4	Low Voltage Systems					
	Subtotal Roof					964,861
3.2.B	Walls					
3.2.B.1	Civil/Structural/Architectural					
3.2.B.1.a	Remove all brick and glass exterior walls.	85,000	sf	10.00	850,000	
3.2.B.1.b	Install new architectural precast spandrel panels. (62,000 Square Feet)	60,200	sf	60.00	3,612,000	
3.2.B.1.c	Redistribute glass around building	24,800	sf	60.00	1,488,000	
3.2.B.1.d	Alternate to items a.-c.:				-	
3.2.B.1.d.1	Clean, tuck-point, seal and caulk, and coat building exterior. (62,000 Square Feet)	62,000	sf	see alternates		
3.2.B.1.d.2	P&I spandrel panels at 4th level across from atrium walls. (352 linear feet by 6 foot high)	2,112	sf	see alternates		
3.2.B.1.d.3	Maintain the existing reflective appearance of the building with new reflective glass.	23,000	sf	see alternates		
3.2.B.1.d.4	Repair wall adjacent to 2nd level parking deck with infill brick.	1	ls	see alternates		
3.2.B.1.e	Remove interior masonry or existing metal stud system at 100% of the building perimeter, replacing with insulated metal stud gypboard furring.	62,000	sf	8.00	496,000	
3.2.B.1.f	Remove mechanical screen wall on north side .	1	ls	45,000.00	45,000	
3.2.B.1.g	Dock Area- Remove existing exterior curtain wall and install new 8 inch CMU wall at dock entry area.		incl		-	
3.2.B.2	Mechanical					
3.2.B.2.a	Remove louver openings on north wall, and above the dock area	1	ls	12,000.00	12,000	
3.2.B.2.b	Remove outside air intake grille from NW exterior dock area ceiling	1	ls	2,000.00	2,000	
3.2.B.3	Electrical					
3.2.B.4	Low Voltage Systems					
	Subtotal Walls					6,505,000
3.2.C	Entrances					
3.2.C.1	Civil/Structural/Architectural					
3.2.C.1.a	Ramp area:					
3.2.C.1.a.1	Add concrete exit stair at existing exit door south of B/9	1	ea	18,000.00	18,000	
3.2.C.1.a.2	Remove overhead door south of C/9. Infill exterior wall with brick.	1	ea	3,000.00	3,000	
3.2.C.1.b	Dock Area: P&I double mandoors (6' x 7' opening) at dock area.	1	ea	2,000.00	2,000	
3.2.C.1.c	P&I new employee ADA operable double door entrances (6 x 7) at NW corner and W side of Metrology lab area	2	ea	2,000.00	4,000	

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	Subtotal $	Total $
3.2.C.2	Mechanical					
3.2.C.3	Electrical					
3.2.C.3.a	Remove wall pack lighting fixture at existing ramp doors south of B/9 and C/9.	1	ls	1,000.00	1,000	
3.2.C.3.b	P&I 110 power to two new double door sets at NW corner, and W side of building.	1	ls	4,000.00	4,000	
3.2.C.3.c	P&I 110 volt power to two overhead doors	1	ls	5,000.00	5,000	
3.2.C.4	Low Voltage Systems					
3.2.C.4.a	P&I Card read at Dock area door.	1	ls	5,000.00	5,000	
3.2.C.4.b	Add two new card readers at new double door entrances NW corner, and W side of building	2	ea	5,000.00	10,000	
	Subtotal Entrances					52,000
	SUBTOTAL BUILDING ENVELOPE					**7,521,861**
3.3	**BUILDING INTERIOR**					
3.3.A	Lab Area to Offices					
3.3.A.1	Civil/Structural/Architectural					
3.3.A.1.a	Demolish all non-load-bearing lab area walls for new office area.	50,000	sf	3.05	152,500	
3.3.A.1.b	Remove all existing floor covering and dispose of in appropriate land fill (flooring has less than 5% asbestos and is not friable).	53,000	sf	5.00	265,000	
3.3.A.1.c	Remove all existing floor finishes in existing lab areas.	53,000	sf	1.00	53,000	
3.3.A.1.d	Remove existing Lab area ceilings	53,000	sf	3.20	169,600	
3.3.A.1.e	Install suspended acoustical ceilings	53,000	sf	10.00	530,000	
3.3.A.1.f	Demolish existing concrete topping, install floor ducting system for electrical and communications, and reinstall floor	53,000	sf	3.50	185,500	
3.3.A.1.g	P&I carpet squares	53,000	sf	75,000.00	75,000	
3.3.A.1.h	Lab Equipment: Remove all existing counters, shelves etc from lab areas	1	ls			
3.3.A.2	Mechanical					
3.3.A.2.a	Cap under floor lab plumbing at the floor line.					
3.3.A.2.a.1	Sanitary Sewer	1	ls	25,000.00	25,000	
3.3.A.2.a.2	Acid resisting waste.	1	ls	25,000.00	25,000	
3.3.A.2.b	Remove above-ground lab piping services in occupied spaces back to main piping in ceiling plenum:					
3.3.A.2.b.1	Potable hot and cold water	1	ls	25,000.00	25,000	
3.3.A.2.b.2	Lab tempered hot supply and return water.	1	ls	25,000.00	25,000	
3.3.A.2.b.3	Lab sanitary waste and vent	1	ls	25,000.00	25,000	
3.3.A.2.b.4	Lab acid resistant waste and vent.	1	ls	50,000.00	50,000	
3.3.A.2.c	Remove all above ground lab piping services from space, through ceiling plenums, and back to source.					
3.3.A.2.c.1	Natural gas back to main piping connection near gas meter.	1	ls	20,000.00	20,000	
3.3.A.2.c.2	Compressed air back to air compressor. If not used, disconnect and remove equipment.	1	ls	20,000.00	20,000	
3.3.A.2.c.3	Distilled water back to generation equipment. If not used disconnect and remove equipment.	1	ls	20,000.00	20,000	
3.3.A.2.c.4	Vacuum back to pumps and tank. If not used, disconnect and remove equipment.	1	ls	20,000.00	20,000	
3.3.A.2.c.5	Liquid soap. Remove equipment	1	ls	10,000.00	10,000	
3.3.A.2.b.5	High-pressure steam in its entirety. Remove boiler	1	ls	40,000.00	40,000	
3.3.A.2.d	Remove all lab exhaust hoods exhaust ductwork, exhaust fans, and dedicated lab outside air supply units. Patch and insulate all openings through walls and roof (assume hazardous disposal)	1	ls	175,000.00	175,000	
3.3.A.2.e	Remove all supply air diffusers and return air grilles in ceiling system. Remove all supply air ductwork from and return air ductwork to existing air handling units.	1	ls	100,000.00	100,000	
3.3.A.3	Electrical					
3.3.A.3.a	Remove all electrical and distribution back to primary switch gear.	1	ls	100,000.00	100,000	
3.3.A.3.b	Furnish and install general office high efficiency fluorescent lighting, providing 50 foot candles in all areas, with dimming ballasts in conference rooms.	1	ls	250,000.00	250,000	
3.3.A.3.c	Install under floor ducts and conduit.	1	ls	150,000.00	150,000	
3.3.A.3.d	Install 110-volt receptacles in new walls.	1	ls	100,000.00	100,000	
3.3.A.3.e	Install under floor receptacles in open office spaces.	1	ls	100,000.00	100,000	
3.3.A.3.f	Remove old wiring in underfloor ducts	1	ls	10,000.00	10,000	
3.3.A.4	Low Voltage Systems					
3.3.A.4.a	Furnish and install fire alarm sensors and alarms in Lab Area	1	ls	100,000.00	100,000	
	Subtotal Lab Areas to Offices					2,820,600
3.3.B	First and Second Floor Existing Office Areas					

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	Subtotal $	Total $
3.3.B.1	Civil/Structural/Architectural					
3.3.B.1.a	Demolish all separation walls (from labs)	1	ls	20,000.00	20,000	
3.3.B.1.b	Demolish all tenant spaces; ducts, ceilings, lights, etc.	29,100	sf	3.00	87,300	
3.3.B.1.c	Provide and install new suspended ceiling	29,100	sf	3.20	93,120	
3.3.B.1.d	Provide and install carpet tiles	29,100	sf	3.50	101,850	
3.3.B.2	Mechanical					
3.3.B.2.a	Refer to Section 3.4.J (Building Mechanical HVAC)					
3.3.B.3	Electrical					
3.3.B.3.a	Refer to Section 3.5.B &C					
3.3.B.4	Low Voltage Systems					
3.3.B.4.a	Refer to Section 3.5 D-F					
	Subtotal First and Second Floor Existing Office Areas					302,270
3.3.C	Restrooms					
3.3.C.1	Civil/Structural/Architectural					
3.3.C.1.a	First Floor- Remodel existing to comply with Americans with Disabilities Acts (ADA) requirements, and increase restroom size (10wc, 2 ur, 10lav)	1	ls	80,000.00	80,000	
3.3.C.1.b	Second Floor- Add restrooms off lobby outside Auditorium - comply with ADA.(3wc, 1 ur, 3 lav)	1	ls	30,000.00	30,000	
3.3.C.1.c	Second Floor- Remodel existing to comply with ADA, and increase restroom size (14wc, 3ur, 14 lav)	1	ls	100,000.00	100,000	
3.3.C.1.d	Third Floor- Remodel existing to ADA; add new restrooms above existing north of grid N (7wc, 2ur, 6lav)	1	ls	50,000.00	50,000	
3.3.C.1.e	Fourth Floor-Remodel existing to ADA; add new restrooms above existing north of grid N (7wc, 2ur, 6lav)	1	ls	50,000.00	50,000	
3.3.C.1.f	Fifth floor- Remodel existing to ADA; add new restrooms above existing north of grid N (7wc, 2ur, 6lav)	1	ls	50,000.00	50,000	
3.3.C.1.g	Add/change hardware and accessories to comply with ADA - all restrooms	1	ls	40,000.00	40,000	
3.3.C.2	Mechanical					
3.3.C.2.a	Replace all existing plumbing fixtures and provide new plumbing fixtures as required, including infrared sensing valves and faucets. For all fixtures, provide potable water and sanitary sewer distribution systems.	1	ls	200,000.00	200,000	
3.3.C.2.b	Include new domestic water isolation valves.	1	ls	50,000.00	50,000	
3.3.C.2.c	Provide increased exhaust ventilation as required	1	ls	75,000.00	75,000	
3.3.C.3	Electrical					
3.3.C.3.a	Provide and install two electric hand dryers per restroom	1	ls	20,000.00	20,000	
3.3.C.3.b	Provide and install new lighting with motion detection in all restrooms.	1	ls	150,000.00	150,000	
3.3.C.3.c	Provide and install two GFCI receptacles in each of the restrooms.	1	ls	20,000.00	20,000	
3.3.C.3.d	P&I conduit and wire to electrical hand dryers and GFCI's	1	ls	15,000.00	15,000	
3.3.C.3.e	Provide power to infrared sensors	1	ls	15,000.00	15,000	
3.3.C.4	Low Voltage Systems - N/A					
	Subtotal Restrooms					945,000
3.3.D	Janitor's Closets					
3.3.D.1	Civil/Structural/Architectural					
3.3.D.1.a	Provide one janitor closet to second floor	1	ea	5,250.00	5,250	
3.3.D.2	Mechanical					
3.3.D.2.a	Provide and install one janitor sink with cold/hot water piping and floor drain	1	ea	2,000.00	2,000	
3.3.D.2.b	Add increased exhaust ventilation.	1	ls	2,000.00	2,000	
3.3.D.3	Electrical					
3.3.D.3.a	Provide and install one 2 by 4 surface mount fluorescent fixture	1	ea	500.00	500	
3.3.D.3.b	Provide and install GFCI receptacle.	1	ea	300.00	300	
3.3.D.4	Low Voltage Systems -N/A					
	Subtotal Janitor's Closets					10,050
3.3.E	Utility Chases					
3.3.E.1	Civil/Structural/Architectural					
3.3.E.1.a	Provide two-hour rated 8" CMU core-filled walls. (See Mechanical a and b below for size and location)	10,360	sf	15.00	155,400	
3.3.E.1.b	Provide five 90-minute rated doors for new electrical chases, one per level	5	ea	800.00	4,000	
3.3.E.1.c	Provide new floor and shaft openings as required for ducts and chases.	1	ls	140,000.00	140,000	
3.3.E.1.d	Fire stop around all new penetrations.	1	ls	160,000.00	160,000	
3.3.E.2	Mechanical					

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	Subtotal $	Total $
3.3.E.2.a	Add Mechanical Chase (approx. 16'x12') NW of M-9, five floors. Packaged, custom penthouse style air handling unit (AHU) on roof above has a weight of approx. 80,000 lbs and covers an area of 20 ft. x 60ft.					
3.3.E.2.b	Add Mechanical Chase (approx.16'x12') NW of H-9, two floors. Packaged, custom penthouse style air handling unit (AHU) on roof above has a weight of approx. 80,000 lbs and covers an area of 20 ft. x 60ft.					
3.3.E.3	Electrical					
3.3.E.3.a	Add Electrical Room/Chase (8'x10') NW of K-13, five floors.					
3.3.E.3.b	Provide and install fluorescent fixture with battery backup and GFCI receptacle on each floor in chase.	5	ea	2,000.00	10,000	
3.3.E.3.c	P&I new 75KVA YFMR/FL and 400A Panel	5	ea	10,000.00	50,000	
3.3.E.4	Low Voltage Systems					
3.3.E.4.a	P&I new 500 pair telecommunications cable from main telephone terminal in new electrical shaft and install terminal cabinets at each floor	1	ls	75,000.00	75,000	
	Subtotal Utility Chases					594,400
3.3.F	Metrology Lab Area Conversion					
3.3.F.1	Civil/Structural/Architectural. Sketch SK-ARCH-003					
3.3.F.1.a	Add corridor form new entry into building - routed around existing truck bay. Corridor interior along grid 1 will be "ramped" for ADA access.	1	ls	50,000.00	50,000	
3.3.F.1.b	Add landing and ramp to interior of truck dock- south end.	1	ls	25,000.00	25,000	
3.3.F.1.c	Elevate existing restrooms to first floor elevation.	1	ls	20,000.00	20,000	
3.3.F.1.d	Infill balance of existing floor to match existing floor elevation.	1	ls	50,000.00	50,000	
3.3.F.1.e	Convert space south of K.4 and north of M to general office area on first level	1	ls	5,000.00	5,000	
3.3.F.1.f	Provide access and service walkways to existing AHU-09.	1	ls	10,000.00	10,000	
3.3.F.1.g	Provide and install suspended ceilings in office, hallway, and restroom areas.	1	ls	4,000.00	4,000	
3.3.F.1.h	Demolish overhead rail	1	ls	1,000.00	1,000	
3.3.F.2	Mechanical					
3.3.F.2.a	Reuse AHU-9 and upgrade controls as required for remodeled spaces.	1	ls	25,000.00	25,000	
3.3.F.2.b	Remove existing variable air volume (VAV) boxes and downstream air distribution. Provide new fan-powered variable air volume boxes with hot water coils. (FPVAV/HW)	1	ls	10,000.00	10,000	
3.3.F.2.c	Remove existing plumbing fixtures.	1	ls	5,000.00	5,000	
3.3.F.2.d	Provide and install new ADA plumbing fixtures and water and waste piping connections to existing services.	1	ls	10,000.00	10,000	
3.3.F.2.e	Provide exhaust ventilation as required	1	ls	10,000.00	10,000	
3.3.F.3	Electrical					
3.3.F.3.a	Remove existing lighting	1	ls	10,000.00	10,000	
3.3.F.3.b	Add three exterior lights	1	ls	7,500.00	7,500	
3.3.F.3.c	Provide and install new fluorescent lighting at 50 foot-candles per square-foot.	1	ls	40,000.00	40,000	
3.3.F.3.d	Provide and install wall receptacles on 12 foot centers.	1	ls	30,000.00	30,000	
3.3.F.3.e	Provide and install two (2) GFCI receptacles in each of the two (2) restrooms.	1	ls	5,000.00	5,000	
3.3.F.3.f	Provide and install power to three (3) exterior doors.	1	ls	6,000.00	6,000	
3.3.F.3.g	Relocate transformer, PP-2, and DP-2 to east wall, north, approx 50' feet away.	1	ls	2,000.00	2,000	
3.3.F.3.h	P&I new conduit and wire from electric room to Transformer D-2, Power Panel PP2, and Distribution Panel DP-2	1	ls	5,000.00	5,000	
3.3.F.4	Low Voltage Systems					
3.3.F.a	Provide and install card access for three (3) exterior doors.	1	ls	15,000.00	15,000	
	Subtotal Metrology Lab Conversion					345,500
3.3.G	Existing Dock Area					
3.3.G.1	Civil/Structural/Architectural					
3.3.G.1.a	Provide and install new interior wall 24 linear foot (metal stud gypboard)	360	sf	15.00	5,400	
3.3.G.1.b	Remove and replace suspended acoustical ceiling	6,400	sf	4.20	26,880	
3.3.G.1.c	Provide and install new interior doors 6' x 7' opening.	2	ea	2,000.00	4,000	
3.3.G.2	Mechanical					
3.3.G.2.a	Add two (2) hot water cabinet unit heaters with piping and controls.	1	ls	10,000.00	10,000	
3.3.G.2.b	Add one (1) fan-powered variable air volume box with piping and controls.	1	ls	7,500.00	7,500	
3.3.G.3	Electrical					

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	Subtotal $	Total $
3.3.G.3.a	Provide and install 3/4" conduit 3 #10 AWG wires to power the unit heaters. (Estimate 150 feet)	1	ls	3,000.00	3,000	
3.3.G.3.b	Prove and install 3/4" conduit 3 #10 AWG wires to power the VAV's.	1	ls	3,000.00	3,000	
3.3.G.3.c	Provide and install six (6) three tube fluorescent high efficiency fixtures.	1	ls	3,000.00	3,000	
3.3.G.3.d	Provide and install two (2) 250 watt metal halide wall pack exterior fixtures.	1	ls	2,000.00	2,000	
3.3.G.3.e	Provide and install 3/4" conduit 3 #10 AWG wires to power the exterior door.	1	ls	1,000.00	1,000	
3.3.G.4	Low Voltage Systems					
3.3.G.4.a	Refer to section 3.2.C.4					
	Subtotal Dock Area					65,780
3.3.H	South Atrium (in office area)					
3.3.H.1	Civil/Structural/Architectural					
3.3.H.1.a	Frame in third, fourth, fifth floor levels (extend offices to exterior wall)	3,390	sf	30.00	101,700	
3.3.H.1.b	Add under-floor electrical ducts as second level in new concrete floor. See Sketch SK-ARCH-004	3,390	sf	5.00	16,950	
3.3.H.2	Mechanical					
3.3.H.2.a	Refer to Section 3.4.J (Building and Mechanical HVAC)					
3.3.H.3	Electrical					
3.3.H.3.a	Refer to Section 3.5.B&C					
3.3.H.4	Low Voltage Systems					
3.3.H.4.a	Refer to Section 3.5 D-F					
	Subtotal South Atrium					118,650
3.3.I	Terrarium Atrium (at plants and pond)					
3.3.I.1	Civil/Structural/Architectural					
3.3.I.1.a	New Second Level Conference Room					
3.3.I.1.a.1	Add retaining wall at first level across Grid P between Grid 9 & 12	1	ls	20,000.00	20,000	
3.3.I.1.a.2	Add new concrete floor to second level	1,920	sf	30.00	57,600	
3.3.I.1.a.3	Infill earthwork to first level	664	cy	9.00	5,976	
3.3.I.1.a.4	Add under-floor electrical ducts in new concrete floor	1,920	sf	5.00	9,600	
3.3.I.1.a.5	Add doors and walls at 2nd level along Grid P at lobby to create new two-story conference room.	1	ls	15,000.00	15,000	
3.3.I.1.a.6	Add new concrete floor to third level	1,920	sf	30.00	57,600	
3.3.I.1.b	New Fourth Level Conference Room					
3.3.I.1.b.1	Add new concrete floor to fourth level	1,920	sf	30.00	57,600	
3.3.I.1.b.2	Add under-floor electrical ducts in new concrete floor	1,920	sf	5.00	9,600	
3.3.I.1.b.3	Add doors and walls along Grid P at lobby to create new two-story conference room.	1	ls	40,000.00	40,000	
3.3.I.1.b.4	Add new concrete floor to fifth level	1,920	sf	30.00	57,600	
3.3.I.2	Mechanical					
3.3.I.2.a	Refer to Section 3.4.J (Building and Mechanical HVAC)					
3.3.I.3	Electrical					
3.3.I.3.a	Refer to Section 3.5.B&C					
3.3.I.4	Low Voltage Systems					
3.3.I.4.a	Refer to Section 3.5 D-F					
	Subtotal Terrarium Atrium					330,576
3.3.J	Southeast Atrium (lobby area)					
3.3.J.1	Civil/Structural/Architectural					
3.3.J.1.a	Infill third level triangle northwest of Grid P.12, and add wall across Grid P above new conference room. See Sketch SK-ARCH-006	1	ls	60,000.00	60,000	
3.3.J.1.b	Infill all fourth level openings up to exterior wall. See sketch SK_ARCH-007	1	ls	30,000.00	30,000	
3.3.J.1.c	Atrium Floor edges: Demolish railing 3rd and 5th floors	140	lf	10.00	1,400	
3.3.J.1.d	Atrium Floor edges: Install fire/smoke proof glass curtain wall system, 3rd and 5th floors	5,225	sf	50.00	261,250	
3.3.J.2	Mechanical					
3.3.J.2.a	Refer to Section 3.4.J (Building and Mechanical HVAC)					
3.3.J.3	Electrical					
3.3.J.3.a	Refer to Section 3.5.B&C					
3.3.J.4	Low Voltage Systems					
3.3.J.4.a	Refer to Section 3.5 D-F					
	Subtotal Southeast Atrium					352,650
3.3.K	Third, Fourth, Fifth Floors					
3.3.K.1	Civil/Structural/Architectural					

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	Subtotal $	Total $
3.3.K.1.a	Demo and replace selected auxiliary separation walls, all ceiling, and carpet.	103,500	sf	4.00	414,000	
3.3.K.1.b	Recover majority of AHU room space on third and fourth floors for new office use.	1	ls	50,000.00	50,000	
3.3.K.1.c	Provide and install suspended ceiling.	103,500	sf	3.20	331,200	
3.3.K.1.d	Provide and install carpet squares.	103,500	sf	3.50	362,250	
3.3.K.2	Mechanical					
3.3.K.2.a	Refer to Section 3.4. J					
3.3.K.3	Electrical					
3.3.K.3.a	Move Panel 5-PB-1 electrical panel to another wall near existing location.	1	ls	5,000.00	5,000	
3.3.K.3.b	Refer to Section 3.5.B & C					
3.3.K.3.c	Remove old wiring in underfloor ducts	1	ls	40,000.00	40,000	
3.3.K.4	Low Voltage Systems					
3.3.K.4.a	Refer to Section 3.5 D-F					
	Subtotal Third, Fourth, Fifth Floors					1,202,450
3.3.L	Elevators					
3.3.L.1	Civil/Structural/Architectural					
3.3.L.1.a	Remove existing elevator cabs, rails, runners, controls and cable systems.	4	ea	25,000.00	100,000	
3.3.L.1.b	Provide and install new ADA compliant elevators.	4	ea	105,000.00	420,000	
3.3.L.2	Mechanical- N/A					
3.3.L.3	Electrical					
3.3.L.3.a	Refer to Section 3.5 B & C					
3.3.L.3.b	Provide and install power as required to elevators.	1	ls	10,000.00	10,000	
3.3.L.4	Low Voltage Systems					
3.3.L.4.a	Refer to Section 3.5 D-F					
	Subtotal Elevators					530,000
3.3.M	Stair Railings					
3.3.M.1	Civil/Structural/Architectural					
3.3.M.1.a	Modify existing railings to meet code					
3.3.M.1.a.1	Remove and replace stair center railings	720	lf	185.00	133,200	
3.3.M.1.a.2	Extend tops and bottoms of railings at landings.	1	ls	10,000.00	10,000	
3.3.M.2	Mechanical -N/A					
3.3.M.3	Electrical -N/A					
3.3.M.4	Low Voltage Systems N/A					
	Subtotal Stair Railings					143,200
3.3.N	Main Lobby Vestibule					
3.3.N.1	Civil/Structural/Architectural					
3.3.N.1.a	Add 22 foot long curtain wall between grids L/12.5 to M/13 with four 3' x 7' doors.	330	sf	60.00	19,800	
3.3.N.1.b	Add 30 foot long curtain between gridsM/13to M/14 with two 3' x7' doors	450	sf	60.00	27,000	
3.3.N.2	Mechanical					
3.3.N.2.a	Revise supply and return air distribution.	1	ls	15,000.00	15,000	
3.3.N.3	Electrical - N/A					
3.3.N.4	Low Voltage Systems N/A				-	
	Subtotal Main Lobby Vestibule					61,800
3.3.O	Tactile (Directional and Informational) Signage					
3.3.O.1	Civil/Structural/Architectural					
3.3.O.1.a	Replace emergency exiting plans (estimate 50 at 11" x 17" in placard)	50	ea	300.00	15,000	
3.3..O.1.b	Install stair level signage at each door, each floor, and all stairs.	1	ls	10,000.00	10,000	
3.3.O.1.c	Install room, office, and workstation signage as required.	1	ls	25,000.00	25,000	
3.3.O.2	Mechanical N/A					
3.3.O.3	Electrical					
3.3.O.3.a	Upgrade all existing exit signs to illuminated exit signage	1	ls	100,000.00	100,000	
3.3.O.4	Low Voltage Systems N/A					
	Subtotal Tactile Signage					150,000
	SUBTOTAL BUILDING INTERIOR					**7,972,926**
3.4	**Building Mechanical**					
3.4.A	Fire Protection Sprinkler System					
3.4.A.1	Civil/Structural/Architectural -N/A					
3.4.A.2	Mechanical					
3.4.A.2.a	For new space layout and ceiling systems; remove, relocate and add sprinkler heads as required.	1	ls	400,000.00	400,000	

	Item / Description	Quantity	Unit	Rate $	Subtotal $	Total $
3.4.A.2.b	Utilize existing piping system. Include new isolation valves.			incl		
3.4.A.3	Electrical N/A					
3.4.A.4	Low Voltage Systems					
3.4.A.4.a	Refer to Section 3.5.F					
	Subtotal Fire Protection Sprinkler System					400,000
3.4.B	HVAC					
3.4.B.1	Civil/Structural/Architectural					
3.4.B.1.a	Provide fire stopping around penetrations for mechanical equipment	1	ls	100,000.00	100,000	
3.4.B.1.b	Install AHU roof curbs (provided by AHU manufacturer).	1	ls	5,000.00	5,000	
3.4.B.1.c	Remove louvers on north wall and refill with brick.	500	sf	30.00	15,000	
3.4.B.1.d	Remove all or portion of (at least 10' by 10') of existing ceiling/floor in rooms 1110, 211, 316, 416, 516.	5	ea	1,000.00	5,000	
3.4.B.2	Mechanical					
3.4.B.2.a	Provide new packaged, custom penthouse style air handling unit (AHU) to serve upper levels three, four, and five	1	ls	400,000.00	400,000	
3.4.B.2.a.1	This unit replaces AHU's 4,5,6,7 and 8.					
3.4.B.2.a.2	Provide and install new supply and return ductwork to each level served.					
3.4.B.2.a.2.a	Combination fire/smoke dampers at all shaft penetrations.	1	ls	100,000.00	100,000	
3.4.B.2.a.2.b	Supply and install medium pressure supply air duct and low pressure return air duct.	1	ls	530,000.00	530,000	
3.4.B.2.b	Provide new packaged, custom penthouse style air handling unit (AHU) to serve lower levels one and two.	1	ls	400,000.00	400,000	
3.4.B.2.b.1	This unit replaces AHU's1,2,3 and the rooftop unit (RU-1).					
3.4.B.2.b.2	Provide and install new supply and return ductwork to each level served.					
3.4.B.2.b.2.a	Combination fire/smoke dampers at all shaft penetrations.	1	ls	170,000.00	170,000	
3.4.B.2.b.2.b	Supply and install medium pressure supply air duct and low pressure return air duct.	1	ls	600,000.00	600,000	
3.4.B.2.c	Provide new series type, fan-powered variable air volume boxes with hot water coils (FPVAV/HW) to replace existing VAV boxes. Approx. quantity will be 200.	1	ls	500,000.00	500,000	
3.4.B.2.c.1	Remove existing ductwork downstream of VAV boxes.	1	ls	25,000.00	25,000	
3.4.B.2.c.2	Provide and install new ductwork downstream of VAV boxes.	1	ls	100,000.00	100,000	
3.4.B.2.c.3	Remove existing supply air diffusers and return air grilles.	1	ls	50,000.00	50,000	
3.4.B.2.c.4	Provide and install new air grilles and air diffusers.	1	ls	250,000.00	250,000	
3.4.B.3	Electrical					
3.4.B.3.a	Provide and install circuit breakers, 4 inch conduit, and 350 KC mil (3 each) wire to two (2) 150 HP supply air fan and two (2) 60 HP return air fan. (approx. 250 linear feet)	1	ls	30,000.00	30,000	
3.4.B.3.b	Provide and install circuit panels, conduit, and wire to VAV boxes. Approx. quantity will be 200, each with a 1 HP motor, 3/4 inch conduit and 3 #10 AWG wires.	1	ls	250,000.00	250,000	
3.4.B.4	Low Voltage Systems -N/A					
	Subtotal HVAC					3,530,000
3.4.C	Facilities Management Control System (FMCS)					
3.4.C.1	Civil/Structural/Architectural -N/A					
3.4.C.2	Mechanical					
3.4.C.2.a	Provide Siemens DDC controls for all HVAC upgrades	1	ls	460,000.00	460,000	
3.4.C.2.b	Replace all pneumatic controls. Remove pneumatic air piping and compressors.	1	ls	50,000.00	50,000	
3.4.C.3	Electrical - N/A					
3.4.C.4	Low Voltage Systems- N/A					
	Subtotal FMCS					510,000
3.4.D	Testing and Balancing					
3.4.D.1	Civil/Structural/Architectural -N/A					
3.4.D.2	Mechanical					
3.4.D.2.a	Provide Testing, Adjusting, and Balancing services as per AABC/NEBB guidelines	1	ls	75,000.00	75,000	
3.4.D.2.a.1	No work					
3.4.D.2.a.2	AABC (American Air Balance Council): Commissioning Guideline					
3.4.D.2.a.3	NEBB (National Environmental Balancing Bureau: Procedural Standards for Buildings Systems Commissioning					
3.4.D.3	Electrical N/A					
3.4.D.4	Low Voltage Systems N/A					
	Subtotal Testing and Balancing/Commissioning					75,000

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	Subtotal $	Total $
3.4.E	Commisioning (Cx) - Not included at this time					
3.4.E.1	Civil/Structural/Architectural -N/A					
3.4.E.2	Mechanical - N/A					
3.4.E.3	Electrical - N/A					
3.4.E.4	Low Voltage Systems- N/A					
	Subtotal Commissioning					-
	Subtotal Building Mechanical					**4,515,000**
3.5	**Building Electrical**					
3.5.A	Main					
3.5.A.1	Civil/Structural/Architectural -N/A					
3.5.A.2	Mechanical - N/A					
3.5.A.3	Electrical					
3.5.A.3.a	Provide and install two (2) electrical switchgears in existing electrical room- 3,000 amp each	1	ls	200,000.00	200,000	
3.5.A.4.	Low Voltage Systems					
3.5.A.4.a	Provide and install power monitoring system	2	ea	7,500.00	15,000	
	Subtotal Main					215,000
3.5.B	Distribution					
3.5.B.1	Civil/Structural/Architectural					
3.5.B.1.a	Tie existing underfloor duct to new electrical chase at two (2) locations on each floor (estimate 50 linear feet of floor cap removal and refloor - 2 1/2" x 6"	10	ea	2,000.00	20,000	
3.5.B.2	Mechanical -N/A					
3.5.B.3	Electrical					
3.5.B.3.a	Provide and install three (2) new 400 amp circuits (3 count 500 KC mil in 4" conduit each) through new electrical chase (250' each)	1	ls	50,000.00	50,000	
3.5.B.3.b	Provide and install two (2) new 400 amp power distribution panels on each floor (42 circuit each).	1	ls	10,000.00	10,000	
3.5.B.3.c	Provide and install three (3) 400 amp circuit breakers.	1	ls	3,000.00	3,000	
3.5.B.3.d	Install 110-volt receptacles in new walls.	1	ls	125,000.00	125,000	
3.5.B.3.e	Install under floor receptacles in open office spaces.				-	
3.5.B.3.f	Add one additional lighting panel to each floor	5	ea	3,000.00	15,000	
3.5.B.3.g	Install two additional 400 amp bus ducts through all floors for additional computers	1	ls	50,000.00	50,000	
3.5.B.4	Low Voltage Systems -N/A					
	Subtotal Distribution					273,000
3.5.C	Lighting					
3.5.C.1	Civil/Structural/Architectural - N/A					
3.5.C.2	Mechanical - N/A					
3.5.C.3	Electrical					
3.5.C.3.a	Per floor, add eight lighting contactors with timers	1	ls	75,000.00	75,000	
3.5.C.3.b	Furnish and install general office high efficiency fluorescent lighting, providing 50 foot-candles in all areas, with dimming ballasts in conference rooms.	1	ls	500,000.00	500,000	
3.5.C.4	Low Voltage Systems					
	Subtotal Lighting					575,000
3.5.D	Phone					
3.5.D.1	Civil/Structural/Architectural (see section 3.3D)					
3.5.D.2	Mechanical - N/A					
3.5.D.3	Electrical - N/A					
3.5.D.4	Low Voltage Systems					
3.5.D.4.a	Provide and install phone cable and fiber to every cubicle and office area.	1	ls	300,000.00	300,000	
3.5.D.4.b	Provide and install phone cable and fiber to conference rooms	1	ls	200,000.00	200,000	
	Subtotal Phone					500,000
3.5.E	P/A					
3.5.E.1	Civil/Structural/Architectural - N/A					
3.5.E.2	Mechanical - N/A					
3.5.E.3	Electrical- N/A					
3.5.E.4	Low Voltage Systems					
3.5.E.4.a	Provide and install PA system to each floor	1	ls	100,000.00	100,000	
	Subtotal P/A					100,000

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

	Item / Description	Quantity	Unit	Rate $	Subtotal $	Total $
3.5.F	Low Voltage Systems					
3.5.F.1	Civil/Structural/Architectural - N/A					
3.5.F.2	Mechanical - N/A					
3.5.F.3	Electrical - N/A					
3.5.F.4	Low Voltage Systems					
3.5.F.4.a	Furnish and install fire alarm sensors and alarms	1	ls	250,000.00	250,000	
3.5.F.4.b	Furnish and install CAT 6e and fiber cables to each cubicle area, office, and two in each conference room.	1	ls	250,000.00	250,000	
3.5.F.4.c	Furnish and install to cable to each outside door for security access and alarm	1	ls	50,000.00	50,000	
3.5.F.4.d	Furnish and install access card reader and magnetic switch on each outside door.	1	ls	50,000.00	50,000	
3.5.F.4.e	Furnish and install electric locks on each outside door	1	ls	50,000.00	50,000	
	Subtotal Low Voltage Systems					650,000
	Subtotal Building Electrical					**2,313,000**

HANSCOMB Faithful&Gould

Schematic Design Cost Estimate
12/15/2004

WALLACE BUILDING EVALUATION
Short Term Repairs and Modifications
Des Moines, Iowa

	Item / Description	Quantity	Uni	Rate $	Subtotal $	Total $
	Alternates					
	Exterior Enclosure - Alternate 1					
3.2.B.1.a	Remove all brick and glass exterior walls.	85,000	sf	(10.00)	(850,000)	
3.2.B.1.b	Install new architectural precast spandrel panels. (62,000 Square Feet)	62,000	sf	(60.00)	(3,720,000)	
3.2.B.1.c	Redistribute glass around building	23,000	sf	(60.00)	(1,380,000)	
3.2.B.1.d	Alternate to items a.-c.:				-	
3.2.B.1.d.1	Clean, tuck-point, seal and caulk, and coat building exterior. (62,000 Square Feet)	62,000	sf	5.12	317,440	
3.2.B.1.d.2	P&I spandrel panels at 4th level across from atrium walls. (352 linear feet by 6 foot high)	2,112	sf	60.00	126,720	
3.2.B.1.d.3	Maintain the existing reflective appearance of the building with new reflective glass.	23,000	sf	30.00	690,000	
3.2.B.1.d.4	Repair wall adjacent to 2nd level parking deck with infill brick.	1	ls	50,000.00	50,000	
	Subtotal Exterior Enclosure - Alternate 1					(4,765,840)
	Subtotal Building Alternates					**(4,765,840)**

WALLACE BUILDING EVALUATION
Long Term Work
Des Moines, Iowa

Schematic Design Cost Estimate

QUALIFICATIONS AND PRICING NOTES

Basis of Pricing

Pricing shown reflects probable construction costs obtainable in the Des Moines, Iowa area on the date of this statement of probable costs. This estimate is a determination of fair market value for the construction of this project. It is not a predication of low bid. Pricing assumes competitive bidding for every portion of the construction work for all subcontractors, that is to mean 4 to 5 bids. If fewer bids are received, bid results can be expected to be higher.

Subcontractor's markups have been included in each line item unit price. These markups cover the cost of field overhead, home office overhead, and profit. These markups can range from 5% to 15% of the cost for that particular item of work. The rates that have been established are for budgetary purposes only and are not to be used to establish the cost of additions or deletions to the scope of work that may arise during the actual construction process.

General Contractors General Conditions, overhead and profit are calculated at 13%.

Design Contingency

A 10% design/estimating contingency has been included in the estimate, the proposed revisions are considered to be conceptual/schematic in nature. This contingency should reduce to zero at bid stage, but the monies identified are likely to be absorbed in the detail "above-the-line".

Escalation

Allowances included within this estimate are of a budgetary nature, for this reason we have not applied an escalation factor to reflect out-turn cost.

Items excluded from the Cost Estimate

Legal and accounting fees
Fire and all risk insurance
Construction contingency
Owner's contingency
Loose furniture, fittings and equipment (FF&E)
Moving costs
Window Treatments
Commissioning

Items that may affect the cost estimate

Modifications to the scope of work included in this estimate.
Special phasing requirements.
Restrictive technical specifications or excessive contract conditions.
Any other non-competitive bid situations.
Bids delayed beyond the projected schedule.

Statements of Probable Cost

Hanscomb Faithful & Gould has no control over the cost of labor and materials, general contractor's or any subcontractor's method of determining prices, or competitive bidding and market conditions. This opinion of probable cost of construction is made on the basis of the experience, qualifications, and best judgment of the professional consultant familiar with the construction industry. HF&G cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from this or subsequent cost estimates.

HF&G's staff of professional cost consultants has prepared this estimate in accordance with generally accepted principles and practices. This staff is available to discuss its contents with interested personnel. Due to the nature of the works, the current design phase, and the unknown amount of hazardous materials to be removed, we would anticipate that this estimate be accurate to +15% / -25%.

Recommendation for Cost Control

Hanscomb Faithful & Gould recommends that the Owner carefully review this document, including line item descriptions, unit prices, clarifications, exclusions, inclusions and assumptions, contingencies, escalation and markups. If the project is over budget, or if there are unresolved budgeting issues, alternate schemes should be evaluated before proceeding further into the design phase.

Requests for modifications of any apparent errors or omissions to this document must be made to Hanscomb Faithful & Gould within ten (10) days of receipt of this estimate. Otherwise, it will be understood that the contents have been concurred with and accepted.

APPENDIX E

INDOOR AIR QUALITY REPORT

November 29, 2004

Mr. Richard Schumacher
AMEC
Midwest Plaza Building
800 Marquette Avenue, Suite 1200
Minneapolis, Minnesota 55402

Subject: Indoor Air Quality Assessment
State of Iowa Wallace Building

Dear Mr. Schumacher:

AMEC Earth & Environmental performed an indoor air quality assessment at the Wallace State Office Building located in Des Moines, Iowa. James N. Friedman, PE, CIH performed the assessment on November 10, 2004. This report documents the findings and conclusions of that assessment.

EXECUTIVE SUMMARY

The following are the major findings of this study:

1) No potential sources of air contaminants were identified in the Wallace State Office Building that would be considered significant health hazards to building occupants. The air sampling results indicate generally good indoor air quality.

2) The analytical results for particulate matter (PM), volatile organic compounds (VOCs), and formaldehyde indicate airborne concentrations were below recommended guidelines for office buildings.

3) The laboratory analytical data obtained for fungal spores showed no evidence of indoor microbial amplification, as airborne concentrations measured indoors were less than those measured outside at the fresh air intakes to the heating, ventilating, and air conditioning (HVAC) systems.

4) The monitoring results on this date for carbon dioxide (CO_2), carbon monoxide (CO), temperature, and relative humidity were consistent with recommended ASHRAE guidelines.

BACKGROUND

The purpose of this indoor air quality (IAQ) evaluation was to assess current IAQ conditions and determine if there were any significant health hazards to workers who occupy this building. The assessment focused on three primary areas:

- Evaluating potential sources of airborne contaminants: particulate matter (PM), volatile organic compounds (VOCs) and formaldehyde.

- Evaluating potential amplification of fungal spores in the indoor air.

- Monitoring trends of carbon dioxide (CO_2), carbon monoxide (CO), temperature, and relative humidity that are indicators of ventilation effectiveness or general comfort conditions in the building.

The air sampling in the Wallace State Office Building was completed on November 10, 2004 during a normal business day when the building was occupied. The HVAC air-handling units were visually inspected and were operating as normally programmed. The supply air temperatures observed were between 70 and 75 ^{o}F.

Indoor air pollutant air samples were collected for particulate matter, volatile organic compounds, and fungal spores. Measurement locations included the following areas: first floor east, second floor west, fifth floor east, and fifth floor west. Additionally, two fungal spore samples were collected outside, at the HVAC inlet louvers (located on the east side of the building). The air samples were collected in accordance with standard National Institute for Occupational Safety and Health (NIOSH) and Occupational Safety and Health Administration (OSHA) sampling methods. The samples were analyzed by the Wisconsin Occupational Health Laboratory, which is accredited by the American Industrial Hygiene Association (AIHA).

A TSI Model 8762 indoor air quality meter was used to monitor CO_2, CO, temperature, and relative humidity. Measurements were collected at both indoor locations (those identified in the previous paragraph) and outdoors near the main entrance of the building.

AIR SAMPLING RESULTS

Particulate Matter

Average particulate concentrations measured with in the building were below the level of analytical detection. See Table 1. Sources of airborne particulate matter in office buildings typically include printers, dry toner copy machines, and manual handling/cutting/shredding of paper. Elevated indoor particulate levels can also occur when the HVAC filtration systems are not operational or has maintenance deficiencies.

The low particulate concentrations measured in Table 1 suggest these sources are not present. The United States Environmental Protection Agency (EPA) has established an outdoor standard of 150 $\mu g/m^3$ (24-hour average) for particulate matter less than 10 micron in aerodynamic diameter. As seen in Table 1 the particulate concentration levels monitored indoors are significantly less than the standard acceptable for outdoor air.

Volatile Organic Compounds

Table 1 shows the VOC concentrations measured in the building ranged from 0.036 to 0.15 mg/m^3. Several studies have reported VOC concentrations in occupied office buildings.

One study (Daisey 1994) reported VOC concentrations in twelve occupied California office buildings ranged from 0.23 to 7 mg/m^3 with a geometric mean of 0.51 mg/m^3. The results of this study suggest that VOC concentrations in the Wallace State Office Building are below those found in the literature for office buildings.

Although standards for exposure to VOCs in indoor environments do not exist, exposure limits have been recommended. The European Collaborative Action (ECA) Report titled "Guidelines for Ventilation Requirements in Buildings" states that those buildings with VOC concentrations less than 0.2 mg/m^3 are considered to be comfortable for human occupancy. As seen in Table 1 the measured VOC concentrations in the Wallace State Office Building were below the limit recommended in the European report.

Formaldehyde

Health concerns associated with low-level exposure to formaldehyde have included asthmatic/pulmonary irritation, skin irritation, and irritating symptoms (eyes, nose, and throat). The OSHA PEL for formaldehyde is 0.75 ppm for industrial indoor environments. The federal target level or HUD standard for manufactured homes is 0.4 ppm. As seen in Table 1, the measured formaldehyde concentrations in the building are 1 to 2 orders of magnitude less than the OSHA and other federal and state guidelines for formaldehyde.

Fungal Spores

Airborne fungal spore samples were collected to assess ambient (indoor) conditions with respect to mold. Fungal air samples are regarded as an indicator of allergenic disease (asthma, hypersensitivity pneumonitis). Samples were collected at the same indoor locations as for particulates, VOCs and formaldehyde. Additionally, two control samples were collected outside at the inlet to the fresh air intake louvers located on the east side of the building on the third level. Outdoor samples are commonly collected and used for assessing potential amplification of indoor microbial levels.

The laboratory results are presented in Table 2. The table shows the fungal concentration in colony forming units per cubic meter of air and fungal genera encountered. The interpretation of indoor air sample results is highly dependent on outdoor sample results. The outdoor profile is dominated by penicillium sp. and cladosporium sp. Pencillium fungi generally dominate soil populations. Dead or decaying leaf populations are generally dominated by cladosporium sp., which is consistent with fungal genera observed with the outside samples.

The results in Table 2 generally show lower fungal concentrations in the indoor samples when compared to the outdoor samples. This data suggests the HVAC units serving the indoor environment are effectively filtering the fungal spores generated outdoors and entrained in the outside air entering the building. Additionally, Table 2 shows no evidence of slimy spore producing fungal genera such as Stachybotrys. The presence of slimy spore-producing fungal genera is generally associated with moisture problems and mold remediation in the building.

Carbon Dioxide and Carbon Monoxide

A TSI air quality monitor was used to monitor carbon dioxide and carbon monoxide concentrations at the indoor monitoring locations. Table 3 shows the monitoring results.

Carbon dioxide (CO_2) is a non-toxic gas that is frequently used as an indicator of building ventilation effectiveness. Carbon dioxide concentration in a building is dependent upon the amount of "fresh" outside air provided, building occupancy levels, and the efficiency of the ventilation system in distributing conditioned air to building occupants. Sufficient ventilation provides for the dilution of building and occupant generated contaminants and odors. The "peak" threshold for CO_2 in occupied buildings recommended by the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) is 1,000 parts per million (ppm). Carbon dioxide levels measured indoors were consistently below 1,000 ppm, which indicates that adequate fresh (outdoor) air is being distributed by the building's HVAC systems.

Carbon monoxide (CO) is a toxic gas that is produced by the incomplete combustion of any fuel-containing atom. The first symptoms to low exposures are headache and fatigue. The United States Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS) for carbon monoxide in outdoor air is 9 ppm for an eight-hour exposure. The NAAQS limits are values known to cause no adverse effects to human health. They are considered an appropriate limit for indoor environments such as the Wallace building. As seen in Table 3, the CO concentrations in the Wallace Building are approximately 3 times lower than the EPA limit.

Temperature and Relative Humidity

Table 3 summarizes temperature and relative humidity results.

The data collected by the TSI air quality monitor indicated that, during occupied hours, the average temperatures were between 73.7 and 76.3 ^{o}F. The ASHRAE guidelines recommend 74 to 78 ^{o}F during summer months and 68 to 74 ^{o}F during winter months. Since the monitoring was conducted in November and between summer and winter seasons, AMEC considers the temperatures recorded in the building to be appropriate for the season.

The average relative humidity levels were between 26.1 and 27.7 percent during occupied hours, were slightly below the ASHRAE recommended range of 30 to 60 percent. Depressed humidity levels, such as those recorded at the Wallace Building, are relatively common in fall and winter months. This is because the humidification systems in these buildings are not typically operated during seasonal transition period between summer and winter months.

CONCLUSIONS

No potential sources of air pollution were identified in the Wallace Building that would be considered a significant health risk to building occupants. No evidence of fungal growth or amplification was found in the indoor samples.

Some of the reported discomfort expressed by building occupants may be related to more to thermal comfort issues than indoor air pollution. During the air sampling on November 10, 2004, the outside air supply rate as indicated by carbon dioxide readings was well within ASHRAE guidelines. However, additional air quality survey activities (CO_2, temperature, and relative humidity) should be considered during hot and cold weather months, when the HVAC systems operate at minimum outdoor air supply rate.

Please call if you have any questions or if AMEC can assist you in any way.

Sincerely,

AMEC

James N. Friedman, PE, CIH
Certified Industrial Hygienist

Attachments: Tables 1, 2, and 3
Appendix A Laboratory Results

TABLE 1

STATE OF IOWA WALLACE BUILDING
AREA AIR SAMPLING RESULTS

PARTICULATE, VOC, AND FORMALDEHYDE
NOVEMBER 10, 2004

Sampling Location	Measured PM	PM Indoor Guideline (1)	Measured VOC	VOC Indoor Guideline (2)	Measured Formaldehyde	Formaldehyde Indoor Guideline (3)
1st Floor East	< 57 µg/m^3	150 µg/m^3	0.036 mg/m^3	0.2 mg/m^3	0.006 ppm	0.4 ppm
2nd Floor West	< 57 µg/m^3	150 µg/m^3	0.15 mg/m^3	0.2 mg/m^3	0.009 ppm	0.4 ppm
5th Floor East	<56 µg/m^3	150 µg/m^3	0.076 mg/m^3	0.2 mg/m^3	0.011 ppm	0.4 ppm
5th Floor West	<55 µg/m^3	150 µg/m^3	0.063 mg/m^3	0.2 mg/m^3	0.010 ppm	0.4 ppm

NOTES:

(1) National Ambient Air Quality Primary Standard for Particulates Less Than 10 Micron in Aerodynamic Diameter, Maximum 24-hour Average for outdoor door air as set by the U.S. Environmental Protection Agency.

(2) Indoor standard for exposure to VOCs does not exist. The European Report titled: "Guidelines for Ventilation Requirements in Buildings" states VOC exposures less than 0.2 mg/m^3 indicates a comfortable target level for human occupancy in buildings.

(3) Housing and Urban Development (HUD) target level for manufactured homes. Minnesota standard for indoor exposure (MN stature 144.495).

TABLE 2

STATE OF IOWA WALLACE BUILDING
AREA AIR SAMPLING RESULTS

FUNGAL SPORES
NOVEMBER 10, 2004

ANALYTE/FUNGI	SAMPLE LOCATION					
	1st Floor East	2nd Floor West	5th Floor East	5th Floor West	Ambient Sample 1	Ambient Sample 2
Total Fungal Spores	**755 CFU/m^3**	**247 CFU/m^3**	**92 CFU/m^3**	**117 CFU/m^3**	**1,573 CFU/m^3**	**1,424 CFU/m^3**
Altermaria sp.	1 CFU/m^3	5 CFU/m^3	—	—	22 CFU/m^3	16 CFU/m^3
Aspergillus ochraceus	—	5 CFU/m^3	—	—	11 CFU/m^3	—
Aspergillus fumigatus	—	5 CFU/m^3	—	—	—	—
Aspergillus nidulans	—	—	5 CFU/m^3	—	—	—
Basidiomycete	—	—	—	—	5 CFU/m^3	11 CFU/m^3
Cladosporium sp.	470 CFU/m^3	190 CFU/m^3	46 CFU/m^3	92 CFU/m^3	1,100 CFU/m^3	1,100 CFU/m^3
Fusarium sp.	—	—	—	—	5 CFU/m^3	11 CFU/m^3
Paecilomyces variotii	—	—	—	5 CFU/m^3	—	—
Penicillium sp.	280 CFU/m^3	42 CFU/m^3	31 CFU/m^3	20 CFU/m^3	430 CFU/m^3	270 CFU/m^3
Ustilago sp.	—	—	10 CFU/m^3	—	—	—
Trichoderma harzianum	—	—	—	—	—	16 CFU/m^3
Other	—	—	—	—	—	—

NOTES:
(1) CFU represents colony forming units per cubic meter of air sampled.

TABLE 3

STATE OF IOWA WALLACE BUILDING
AREA AIR SAMPLING RESULTS

CARBON DIOXIDE, CARBON MONOXIDE TEMPERATURE, AND RELATIVE HUMIDITY
NOVEMBER 10, 2004

Sampling Location	Average PPM CO_2	ASHRAE Guideline (1)	Average PPM CO	ASHRAE Guideline (2)	Average DB Temp.	ASHRAE Guideline (3)	Average % RH	ASHRAE Guideline (3)
1st Floor East	448 ppm	1,000 ppm	2.4 ppm	9 ppm	73.7 °F	68 – 74 (W) 74 – 78 (S)	27.7%	30 to 60
2nd Floor West	496 ppm	1,000 ppm	2.5 ppm	9 ppm	75.4 °F	68 – 74 (W) 74 – 78 (S)	27.2%	30 to 60
5th Floor East	503 ppm	1,000 ppm	2.5 ppm	9 ppm	74.8 °F	68 – 74 (W) 74 – 78 (S)	27.7%	30 to 60
5th Floor West	506 ppm	1,000 ppm	2.6 ppm	9 ppm	76.3 °F	68 – 74 (W) 74 – 78 (S)	26.1%	30 to 60
Outdoors (4)	345 ppm	—	3.5 ppm	9 ppm	63.5 °F	—	36 %	—

NOTES:

(1) ASHRAE Guideline 62-1999, “Ventilation for Acceptable Indoor Air Quality”.

(2) National Ambient Air Quality Primary Standard for Carbon Monoxide, 8-hour average for outdoor door air as set by the U.S. Environmental Protection Agency.

(3) ASHRAE Guideline 55-1991, “Thermal Environmental Conditions for Human Occupancy”. (W) means winter months, (S) means summer months.

(4) Readings outdoors were taken near the front entrance of the building facing the state capital building.

APPENDIX A

LABORATORY ANALYTICAL REPORTS

Analytical Laboratory Report

Report ID: 9025830

November 12, 2004

JAMES FRIEDMAN
AMEC
MIDWEST PLAZA BLDG STE 1200
800 MARQUETTE AVE
MINNEAPOLIS MN 55402

Company Number: 8047

Date Collected:	11/10/2004
Date Received:	11/11/2004
Date Reported:	11/12/2004

Analyst: _____

JOHN D DRAEGER, Chemistry Lab Technician
draeger@mail.slh.wisc.edu

Reviewer: _____

LYLE REICHMANN, CIH - Inorganic Supervisor
lr@mail.slh.wisc.edu

WOHL uses only verified, secured electronic signatures on reports.
These signatures are as valid as original handwritten signatures.

If you have any questions regarding this report please feel free to contact the laboratory via email (as listed above) or via telephone at 800-446-0403

Analytical Results

LAB NUMBER / FIELD NUMBER	DESCRIPTION			AIR VOLUME
1114616	2PYF			928.3 liters
P-1E				
Total Weight		ND <53 µg/sample	ND <0.057 mg/m³	
1114617	2PYF			925.9 liters
P-2W				
Total Weight		ND <53 µg/sample	ND <0.057 mg/m³	
1114618	2PYF			940.8 liters
P-5E				
Total Weight		ND <53 µg/sample	ND <0.056 mg/m³	
1114619	2PYF			960 liters
P-5W				
Total Weight		ND <53 µg/sample	ND <0.055 mg/m³	

COMMENTS: Gravimetric results completed 11/11/04.

Displayed values on report have been rounded; however all calculations are performed using raw, unrounded intermediate results.
Please contact the laboratory if you have any questions regarding our result calculation or rounding.
ND = None Detected. Results are less than the method detection limit

Analytical Methodology

WEIGHT SAMPLE RESULTS:

Samples were analyzed by WOHL in-house method based on NIOSH 0500 and 0600.

The samples were collected on preweighed filters. Upon return to the lab, the filters are re-weighed on a microbalance. The initial weight is subtracted from the final weight.

The results are expressed as milligrams per cubic meter of air if the air collection volume was provided; otherwise as micrograms per sample. All results are blank corrected if a blank was provided unless otherwise noted in the comments section of the report.

REPORTING LIMITS:

This table contains the WOHL determined reporting limits for the compounds specified in this report. These numbers are based on the historical statistical data for a particular analyte or are based on WOHL determined values.

Analyte	Reporting Limit
Total Weight on 2PYF	53 µg/sample

Analytical Quality Control

Due to technical considerations related to the production of known spiked control samples, no external quality control samples were analyzed with this study. However, all other quality assurance measures such as daily calibration, linearity checks, detection limit and desorption determination and peer and supervisory review of the data have been performed. The results in this report conform to the high quality standards set forth at The Wisconsin Occupational Health Laboratory.

End of Analytical Report

The results in this report apply only to the samples, specifically listed above, tested at the Wisconsin Occupational Health Laboratory .
This report is not to be reproduced except in full.

Analytical Laboratory Report

Report ID: 9026150

November 19, 2004

JAMES FRIEDMAN
AMEC
MIDWEST PLAZA STE 1200
800 MARQUETTE AVE
MINNEAPOLIS MN 55402

Company Number: 8047

Date Collected:	11/10/2004
Date Received:	11/11/2004
Date of Analysis:	11/15/2004
Date Reported:	11/19/2004

Analyst: Shari L Schwabe

SHARI L SCHWABE, Advanced Chemist
sls@mail.slh.wisc.edu

Reviewer: Steve Strebel

STEVE STREBEL, Organic Supervisor
ss@mail.slh.wisc.edu

WOHL uses only verified, secured electronic signatures on reports.
These signatures are as valid as original handwritten signatures.

If you have any questions regarding this report please feel free to contact the laboratory via email (as listed above) or via telephone at 800-446-0403

Analytical Results

LAB NUMBER / FIELD NUMBER	DESCRIPTION			AIR VOLUME
1114630	SCT			96.9 liters
V-4E				
Solvent Scan				
Acetone		<=2.1 µg/sample	<=0.022 mg/m³	<=0.0091 ppm
Decamethylcyclo Pentasiloxane		<=3.1 µg/sample	<=0.032 mg/m³	<=0.0021 ppm
Ethyl Alcohol		ND <5.0 µg/sample	ND <0.052 mg/m³	ND <0.027 ppm
Isopropyl Alcohol		ND <1.2 µg/sample	ND <0.012 mg/m³	ND <0.0050 ppm
Naphtha (Coal Tar)		ND <0.50 µg/sample	ND <0.0052 mg/m³	ND <0.0010 ppm
Petroleum Distillates		1.5 µg/sample	0.016 mg/m³	0.0044 ppm
Phenylcyclohexene (4-)		ND <5.0 µg/sample	ND <0.052 mg/m³	ND <0.0080 ppm
Toluene		<=1.7 µg/sample	<=0.018 mg/m³	<=0.0047 ppm
Total VOCs as Hexane		3.5 µg/sample	0.036 mg/m³	0.010 ppm
Xylene		ND <0.40 µg/sample	ND <0.0041 mg/m³	ND <0.00095 ppm
1114631	SCT			99.8 liters
V-2W				
Solvent Scan				
Acetone		<=2.1 µg/sample	<=0.021 mg/m³	<=0.0089 ppm
Decamethylcyclo Pentasiloxane		4.6 µg/sample	0.047 mg/m³	0.0031 ppm
Ethyl Alcohol		<=6.5 µg/sample	<=0.065 mg/m³	<=0.035 ppm
Isopropyl Alcohol		<=3.1 µg/sample	<=0.031 mg/m³	<=0.013 ppm
Naphtha (Coal Tar)		ND <0.50 µg/sample	ND <0.0050 mg/m³	ND <0.0010 ppm
Petroleum Distillates		9.3 µg/sample	0.093 mg/m³	0.026 ppm
Phenylcyclohexene (4-)		ND <5.0 µg/sample	ND <0.050 mg/m³	ND <0.0077 ppm
Toluene		<=1.7 µg/sample	<=0.017 mg/m³	<=0.0045 ppm
Total VOCs as Hexane		15 µg/sample	0.15 mg/m³	0.043 ppm
Xylene		<=1.7 µg/sample	<=0.017 mg/m³	<=0.0039 ppm
1114632	SCT			99.3 liters
V-5E				
Solvent Scan				
Acetone		<=2.1 µg/sample	<=0.021 mg/m³	<=0.0089 ppm
Decamethylcyclo Pentasiloxane		6.5 µg/sample	0.066 mg/m³	0.0043 ppm
Ethyl Alcohol		ND <5.0 µg/sample	ND <0.050 mg/m³	ND <0.027 ppm
Isopropyl Alcohol		<=3.1 µg/sample	<=0.031 mg/m³	<=0.013 ppm
Naphtha (Coal Tar)		ND <0.50 µg/sample	ND <0.0050 mg/m³	ND <0.0010 ppm
Petroleum Distillates		3.2 µg/sample	0.033 mg/m³	0.0093 ppm
Phenylcyclohexene (4-)		ND <5.0 µg/sample	ND <0.050 mg/m³	ND <0.0078 ppm
Toluene		<=1.7 µg/sample	<=0.017 mg/m³	<=0.0045 ppm
Total VOCs as Hexane		7.5 µg/sample	0.076 mg/m³	0.021 ppm
Xylene		ND <0.40 µg/sample	ND <0.0040 mg/m³	ND <0.00093 ppm

Analytical Results

LAB NUMBER / FIELD NUMBER	DESCRIPTION			AIR VOLUME
1114633	SCT			98.6 liters
V5W				
Solvent Scan				
Acetone		<=2.1 µg/sample	<=0.021 mg/m³	<=0.0090 ppm
Decamethylcyclo Pentasiloxane		6.5 µg/sample	0.066 mg/m³	0.0043 ppm
Ethyl Alcohol		<=6.5 µg/sample	<=0.066 mg/m³	<=0.035 ppm
Isopropyl Alcohol		<=3.1 µg/sample	<=0.031 mg/m³	<=0.013 ppm
Naphtha (Coal Tar)		ND <0.50 µg/sample	ND <0.0051 mg/m³	ND <0.0010 ppm
Petroleum Distillates		2.1 µg/sample	0.021 mg/m³	0.0061 ppm
Phenylcyclohexene (4-)		ND <5.0 µg/sample	ND <0.051 mg/m³	ND <0.0078 ppm
Toluene		ND <0.40 µg/sample	ND <0.0041 mg/m³	ND <0.0011 ppm
Total VOCs as Hexane		6.2 µg/sample	0.063 mg/m³	0.018 ppm
Xylene		ND <0.40 µg/sample	ND <0.0041 mg/m³	ND <0.00093 ppm

COMMENTS: Samples 1114630-1114633 may also contain traces of n-heptane.

Displayed values on report have been rounded; however all calculations are performed using raw, unrounded intermediate results.
Please contact the laboratory if you have any questions regarding our result calculation or rounding.
ND = None Detected. Results are less than the method detection limit
<= Less Than or Equal To. The analyte was detected but at a level too low to be accurately quantitated. The actual amount is less than or equal to the reported value.

Analytical Methodology

GENERAL SOLVENTS:
These samples are analyzed using WOHL method WG006, which is based on the method, OSHA 7.

The collection media is a SMALL (SCT), LARGE (LCT) or JUMBO (JCT) Activated Charcoal tube.

Front and back sections of the tube are separately desorbed in 1 ml for SMALL tubes, 3 ml for LARGE tubes or 5 ml for JUMBO tubes, of Carbon Disulfide for 30 minutes prior to analysis.

The samples are run on a Hewlett-Packard Gas Chromatograph equipped with an FID. The Primary and Confirming columns were chosen from the following:
Carbopack C /0.1% SP-1000
VoCol 105M Capillary
HP-5 Capillary
Supelcowax-10 Capillary
SPB-624 capillary

Samples may also have been confirmed on a Model 5972 Hewlett-Packard Gas Chromatograph Mass-Selective Detector containing a Nukol Capillary.

Reporting Limits are specific for each substance.

Results are not blank corrected unless noted in report.

TOTAL VOC AS REQUESTED ANALYTE ON CHARCOAL TUBE OR BADGE MEDIA:
These samples are analyzed by WOHL methods WG034 or WG059, which are based on in-house modifications of OSHA 7, 3M organic vapor monitor, and SKC series 575 organic vapor monitor protocols.

Samples are either actively collected on small(sct), large(lct), or jumbo(jct) activated charcoal tubes or passively collected on 3M organic vapor monitor badges or SKC series 575 organic vapor monitors. Front & back sections of the media are separately desorbed in an appropriate amount of carbon disulfide following WOHL, 3M, or SKC series 575 media preparation procedures.

Samples are injected on Hewlett-Packard gas chromatographs equipped with flame ionization detectors(GC-FID). Primary and confirming columns are chosen from the following:
Carbopack C/0.1% SP-1000
VoCol 105M Capillary
Supelcowax-10 Capillary
HP-5 capillary
SPB-624 capillary

Samples may also have been confirmed on a Model 5972 Hewlett-Packard Gas Chromatograph Mass-Selective Detector containing a capillary column.

All of the organic vapor amount in the sample is quantitated using a requested analyte as the reference standard. The method provides an estimate of the overall organic vapor content in the samples. Results indicate a "worst case" scenario because they include every detected VOC in the sample, with the assumption that the response for all of the

Analytical Methodology

detected VOC's is similar to that of the requested analyte.

Samples are not blank corrected unless noted in the analytical report. Results for badge media are calculated using manufacturer-supplied factors. All reporting limits for all types of media are derived from lot 2000 charcoal tube media.

REPORTING LIMITS:

This table contains the WOHL determined reporting limits for the compounds specified in this report. These numbers are based on the historical statistical data for a particular analyte or are based on WOHL determined values.

Analyte	Reporting Limit
Acetone on SCT	2.1 µg/sample
Decamethylcyclo Pentasiloxane on SCT	3.1 µg/sample
Ethyl Alcohol on SCT	6.5 µg/sample
Isopropyl Alcohol on SCT	3.1 µg/sample
Naphtha (Coal Tar) on SCT	1.8 µg/sample
Petroleum Distillates on SCT	1.3 µg/sample
Phenylcyclohexene (4-) on SCT	5 µg/sample
Toluene on SCT	1.7 µg/sample
Total VOCs as Hexane on SCT	0.8 µg/sample
Xylene on SCT	1.7 µg/sample

Analytical Laboratory Report

Report ID: 9026103

November 19, 2004

JAMES FRIEDMAN
AMEC
MIDWEST PLAZA TEE 1200
800 MARQUETTE AVE
MINNEAPOLIS MN 55402

Company Number: 8047

Date Collected:	11/10/2004
Date Received:	11/11/2004
Date of Analysis:	11/19/2004
Date Reported:	11/19/2004

Analyst: _____

LEROY DOBSON, Advanced Chemist
ld@mail.slh.wisc.edu

Reviewer: _____

LYLE REICHMANN, CIH - Inorganic Supervisor
lr@mail.slh.wisc.edu

WOHL uses only verified, secured electronic signatures on reports.
These signatures are as valid as original handwritten signatures.

If you have any questions regarding this report please feel free to contact the laboratory via email (as listed above) or via telephone at 800-446-0403

Analytical Results

LAB NUMBER / FIELD NUMBER	DESCRIPTION				AIR VOLUME
1114626	SKC226-119				101.7 liters
F-4E					
Formaldehyde		0.73 µg/sample	0.0072 mg/m³	0.0059 ppm	
1114627	SKC226-119				99.1 liters
F-2W					
Formaldehyde		1.1 µg/sample	0.011 mg/m³	0.0090 ppm	
1114628	SKC226-119				100.0 liters
F-5E					
Formaldehyde		1.3 µg/sample	0.013 mg/m³	0.011 ppm	
1114629	SKC226-119				95.5 liters
F-5W					
Formaldehyde		1.1 µg/sample	0.012 mg/m³	0.0095 ppm	

Displayed values on report have been rounded; however all calculations are performed using raw, unrounded intermediate results.
Please contact the laboratory if you have any questions regarding our result calculation or rounding.

Analytical Methodology

FORMALDEHYDE (BY HPLC):
Samples were analyzed by method WL051 based on method T011.

An air sample is collected by drawing a known volume of air through a 2,4 dinitrophenylhydrazine (DNPH) treated cartridge. The sample is extracted with acetronitrile and analyzed by HPLC with uv detection.

The results are expressed as parts per million if the air collection volume is provided, otherwise as micrograms per sample. All results are not blank corrected unless otherwise noted on the report.

REPORTING LIMITS:

This table contains the WOHL determined reporting limits for the compounds specified in this report. These numbers are based on the historical statistical data for a particular analyte or are based on WOHL determined values.

Analyte	Reporting Limit
Formaldehyde on SKC226-119	0.0645 µg/sample

Analytical Quality Control

Laboratory prepared quality control (QC) samples were analyzed along with the samples included in the analytical report. The analysis results for these QC samples are listed below.

Instrument Used for Analysis: Perkin Elmer HPLC

Laboratory Control Sample: 112137

QC Sample Media: DNPH silica gel tubes

Analyte	Target Value	Recovery (%)	Acceptable Recovery (%)	Pass/Fail
Formaldehyde on DNPH silica gel	1.2 µg/sample	113.8	79 - 121	PASS

Laboratory Control Sample: 112138

QC Sample Media: DNPH silica gel tubes

Analyte	Target Value	Recovery (%)	Acceptable Recovery (%)	Pass/Fail
Formaldehyde on DNPH silica gel	2.9 µg/sample	103.0	79 - 121	PASS

The acceptable range for an analyte is based on the standard deviation of each analyte, which has been determined from statistical evaluation of the historical performance of the assay. The acceptable range includes up to 3 standard deviations, so a result within 3 standard deviations is considered to have passed the QC requirements. A result ouside of the acceptable range is considered to have failed QC and may indicate the direction of possible bias for the samples included in the analytical report. The analytes used for QC determination will not always be the same analytes that appear in the samples for the report, however they are representative of the compounds found in the samples and indicative of overall assay performance.

End of Analytical Report

The results in this report apply only to the samples, specifically listed above, tested at the Wisconsin Occupational Health Laboratory .
This report is not to be reproduced except in full.

Analytical Laboratory Report

Report ID: 9026088

November 18, 2004

JAMES FRIEDMAN
AMEC
MIDWEST PLAZA TEE 1200
800 MARQUETTE AVE
MINNEAPOLIS MN 55402

Company Number: 8047

Date Collected:	11/10/2004
Date Received:	11/11/2004
Date Reported:	11/18/2004

Analyst: Christine Powell

CHRISTINE POWELL, Advanced Microbiologist
powellcj@mail.slh.wisc.edu

Reviewer:

STEVE STREBEL, Organic Supervisor
ss@mail.slh.wisc.edu

WOHL uses only verified, secured electronic signatures on reports.
These signatures are as valid as original handwritten signatures.

If you have any questions regarding this report please feel free to contact the laboratory via email (as listed above) or via telephone at 800-446-0403

Analytical Results

Sample Number Field Number	Air Sample Volume (Liters)	Analyte Fungi	Results		%
1114620					
M-1E					
	193.6	Cladosporium species	91 CFU	470 CFU/m³	62.3
		Penicillium species	54 CFU	280 CFU/m³	37.0
		Alternaria species	1 CFU	5.2 CFU/m³	0.7
1114621					
M-2W					
	192.64	Cladosporium species	36 CFU	190 CFU/m³	76.6
		Penicillium species	8 CFU	42 CFU/m³	17.0
		Aspergillus ochraceus	1 CFU	5.2 CFU/m³	2.1
		Aspergillus fumigatus	1 CFU	5.2 CFU/m³	2.1
		Alternaria species	1 CFU	5.2 CFU/m³	2.1
1114622					
M-5E					
	195.33	Cladosporium species	9 CFU	46 CFU/m³	50.0
		Penicillium species	6 CFU	31 CFU/m³	33.3
		Ustilago species	2 CFU	10 CFU/m³	11.1
		Aspergillus nidulans	1 CFU	5.1 CFU/m³	5.6
1114623					
M-5W					
	195.84	Cladosporium species	18 CFU	92 CFU/m³	78.3
		Penicillium species	4 CFU	20 CFU/m³	17.4
		Paecilomyces variotii	1 CFU	5.1 CFU/m³	4.3

Sample Number Field Number	Air Sample Volume (Liters)	Analyte Fungi	Results		%
1114624					
M-20E					
	185.14	Cladosporium species	200 CFU	1100 CFU/m³	69.4
		Penicillium species	80 CFU	430 CFU/m³	27.8
		Alternaria species	4 CFU	22 CFU/m³	1.4
		Aspergillus ochraceus	2 CFU	11 CFU/m³	0.7
		Fusarium species	1 CFU	5.4 CFU/m³	0.3
		Basidiomycete	1 CFU	5.4 CFU/m³	0.3
		NOTE: Filter overloaded; all counts are estimated. Actual counts may be higher.			
1114625					
M-10[redacted]					
	185.14	Cladosporium species	200 CFU	1100 CFU/m³	76.9
		Penicillium species	50 CFU	270 CFU/m³	19.2
		Alternaria species	3 CFU	16 CFU/m³	1.2
		Trichoderma harzianum	3 CFU	16 CFU/m³	1.2
		Fusarium species	2 CFU	11 CFU/m³	0.8
		Basidiomycete	2 CFU	11 CFU/m³	0.8
		NOTE: Filter overloaded; all counts are estimated. Actual counts may be higher.			

Displayed values on report have been rounded; however all calculations are performed using raw, unrounded intermediate results. Please contact the laboratory if you have any questions regarding our result calculation or rounding.

Analytical Quality Control

Quality control samples are analyzed to ensure the accuracy of these results. These results meet the quality standards of WOHL's Environmental Microbiology section.

Analytical Methodology

FUNGI RESULTS:

Samples are analyzed by the standard mycology procedure by the Wisconsin Occupational Health Laboratory. The date of analysis is the date received as listed on the report.

Air samples on filters

The filter is placed directly on Malt Extract Agar and incubated at 25 degrees C for 7 days.

Andersen samples/Impaction samples

Samples are incubated at 25 degrees C for 7 days.

Wipe/Bulk samples

Examples: Liquids (lubricating oils and drain pan fluids), carpets,drywall, ceiling tiles,insulation, wipes, wood chips, silage, compost, textiles and scrapings.

Liquids are cultured directly and with dilutions made with sterile water onto Malt Extract agar and incubated at 25 degrees C for 7 days.

Carpets, tile, insulation etc. are measured or weighed. Spores are washed from samples. Dilutions are made in sterile water. Aliquots are cultured on Malt Extract agar, Malt Extract agar with NaCl, and/or Cellulose agar and incubated at 25 degrees C for 7 days.

Wipes are washed with sterile water, dilutions are made with sterile water and aliquots are cultured on Malt Extract agar, Malt extract agar with NaCl, and/or Cornmeal agar at 25 degrees C for 7 days.

Evaluation

Fungi are identified by microscopic and macroscopic examination. Most molds are identified to genus level. Aspergillus species, Stachybotrys chartarum,Trichoderma species, and several other isolates are identified to the species level.

Results

Quantity of growth for air samples is reported in colony forming units (CFU) and colony forming units/cubic meter(CFU/M3).

Quantity of growth for bulk samples is reported in colony forming units/gram(CFU/gram), colony forming units/square inch (CFU/in2), colony forming units/ square centimeter(CFU/cm2) or colony forming units per milliliter(CFU/ml).

Quantity of growth for wipe samples is reported as CFU. If wipe area is known, results will be reported as colony forming units/square inch(CFU/in2), colony forming units/square foot (CFU/ft2) or colony forming units/square centimeter(CFU/cm2).

Results are not blank corrected.

Interpretation

There is no PEL(permissible exposure limit) or TLV(Threshold limit value) available for fungal results from air, wipe or bulk samples.

Fungal results from indoor air samples should be compared to fungal results collected outdoors and in non-complaint areas. Generally, indoor sample fungal genera and levels should be

Analytical Methodology

equal to or less than outdoor and non-complaint area fungal levels.
Different genera or increased levels of fungi present on indoor air samples compared to outdoor air samples may indicate fungal growth inside.
Fungi are ubiquitous in the environment. Low quantities of fungi may not be significant especially in bulk and wipe samples.

Limitations

Cultures are for viable fungi only. Biases may result due to sampling inefficiencies and stress experienced by the fungi during sampling and culturing.
The limit of detection (LOD) for air samples is 1 CFU per sample. The LOD is adjusted according to the volume of air sampled. The minimum concentration of viable fungi detected in air samples is dependent on the sampling device, volume of air sampled and sample processing.
The limit of detection (LOD) for bulk and wipe samples is 100 CFU per sample analyzed. The LOD is adjusted for amount or size of sample analyzed. The LOD for liquid samples is 10 cfu/ml. The minimum concentration of viable fungi detected in bulk samples is dependent on the sample area, collection method, and sample processing. Wipe and bulk samples results represent only the area sampled.
Results for bulk samples for CFU/gram analysis with a low amount of material present will have a greater margin of error. Minimum suggested weight is 0.5-1.0 gram.

End of Analytical Report

The results in this report apply only to the samples, specifically listed above, tested at the Wisconsin Occupational Health Laboratory . This report is not to be reproduced except in full.

APPENDIX F

TESTING AND BALANCING REPORT

Testing, Adjusting, & Balancing (TAB) - Airflow Measurements & Recommendations Summary

	HVAC UNIT	Floor Level - Areas Served	Airflow (CFM)		Supply Air Duct Velocity (FPM) at Peak Design Airflow		Revised Airflow (CFM) for Low Sound & Energy Use
			Measured[1]	Original Design	Original	Recommended	Recommended
	AHU-1	1st - Labs W	11765	31000	3900	1850	15000
	AHU-2	1st - Labs E & W	13260	22000	3100	1750	12000
	AHU-3	2nd - Offices E & W 1st - Offices E	15607	26500	3200	1800	15000
	AHU-4	2nd - Offices E 1st - Offices E	18000	11585	3000	1650	10000
	AHU-5	3rd - Offices E & W	26500	16096	3750	1800	13500
	AHU-6	2nd - Auditorium	(not measured)	6000	1100	No change	No change
	AHU-7	5th - Offices E & W	27500	20229	3300	1850	15500
	AHU-8	4th - Offices E & W	17781	26500	3200	1850	15500
	AHU-9	1st - Metrology	(not measured)	10000	2200	1400	7500
	RU-1 (Trane rooftop)	2nd - DCI Labs	(not measured)	13510	1800	No change	No change

Note 1: Airflow measurements performed by Martin Pieper, AABC Test & Balance Engineer from Systems Management & Balancing, Inc. (November 10 & 11, 2004)

APPENDIX G

SKETCHES

146259-SK-ARCH-001	Partial Site Plan
146259-SK-ARCH-002	Modifications at Parking RAmp
146259-SK-ARCH-003, REV. 1	Proposed Layout for Previous Metrology Lab
146259-SK-ARCH-004	Plan—Infill of South Atrium
146259-SK-ARCH-005	Plan—At (Terrarium) Atrium – 2nd Level
146259-SK-ARCH-006	3rd Level Atrium Modifications
146259-SK-ARCH-007	(Untitled)
146259-SK-ARCH-008	Third Floor Plan – East Side
146259-SK-ARCH-009	Fourth Floor Plan – East Side
146259-SK-ARCH-010	Lobby Redesign
146259-SK-MECH-001	HVAC Roof Plan, Mechanical

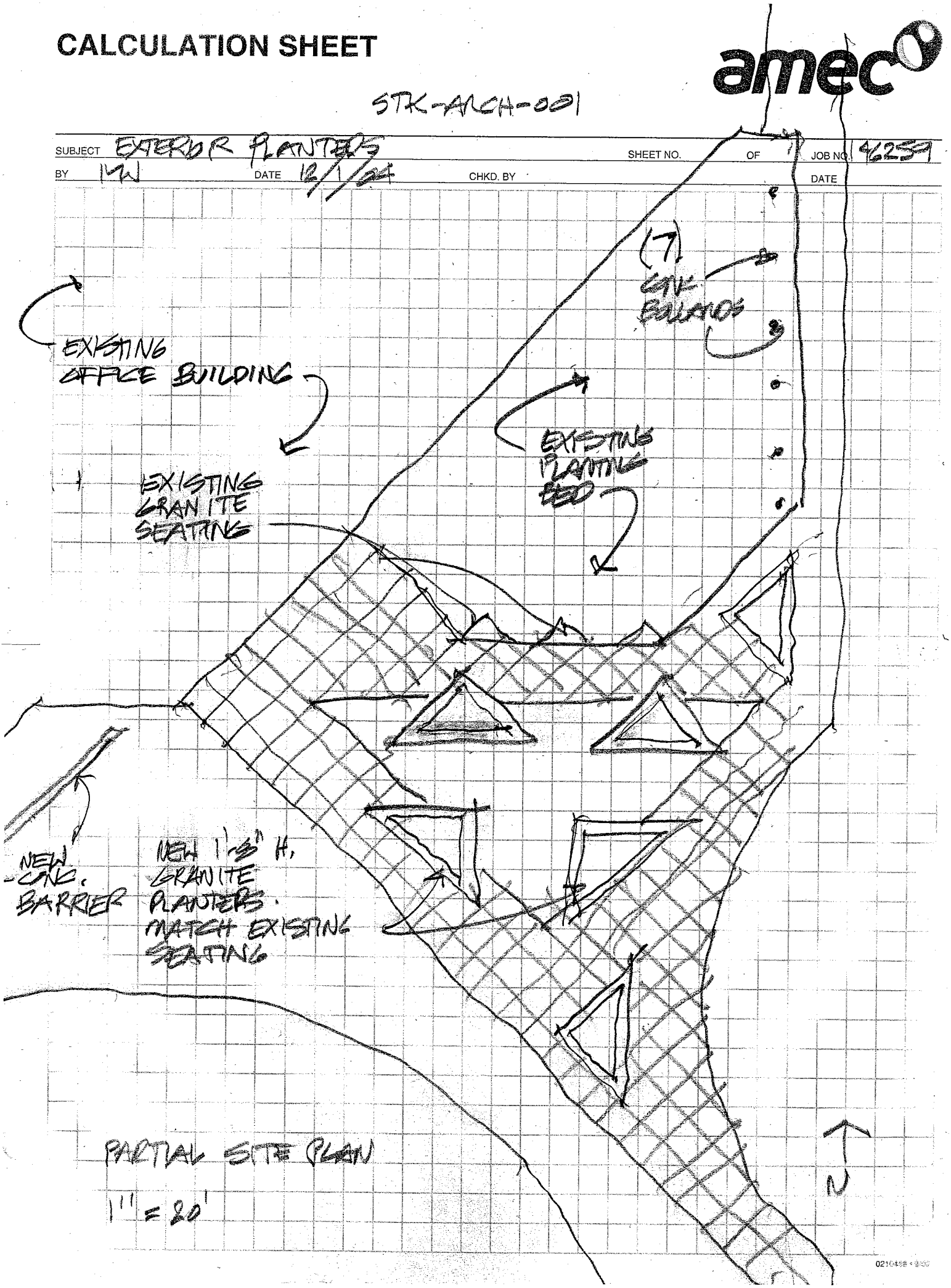
CALCULATION SHEET

amec

STK-ARCH-001

SUBJECT EXTERIOR PLANTERS SHEET NO. OF JOB NO. 46259

BY LTW DATE 12/1/04 CHKD. BY DATE



PARTIAL SITE PLAN

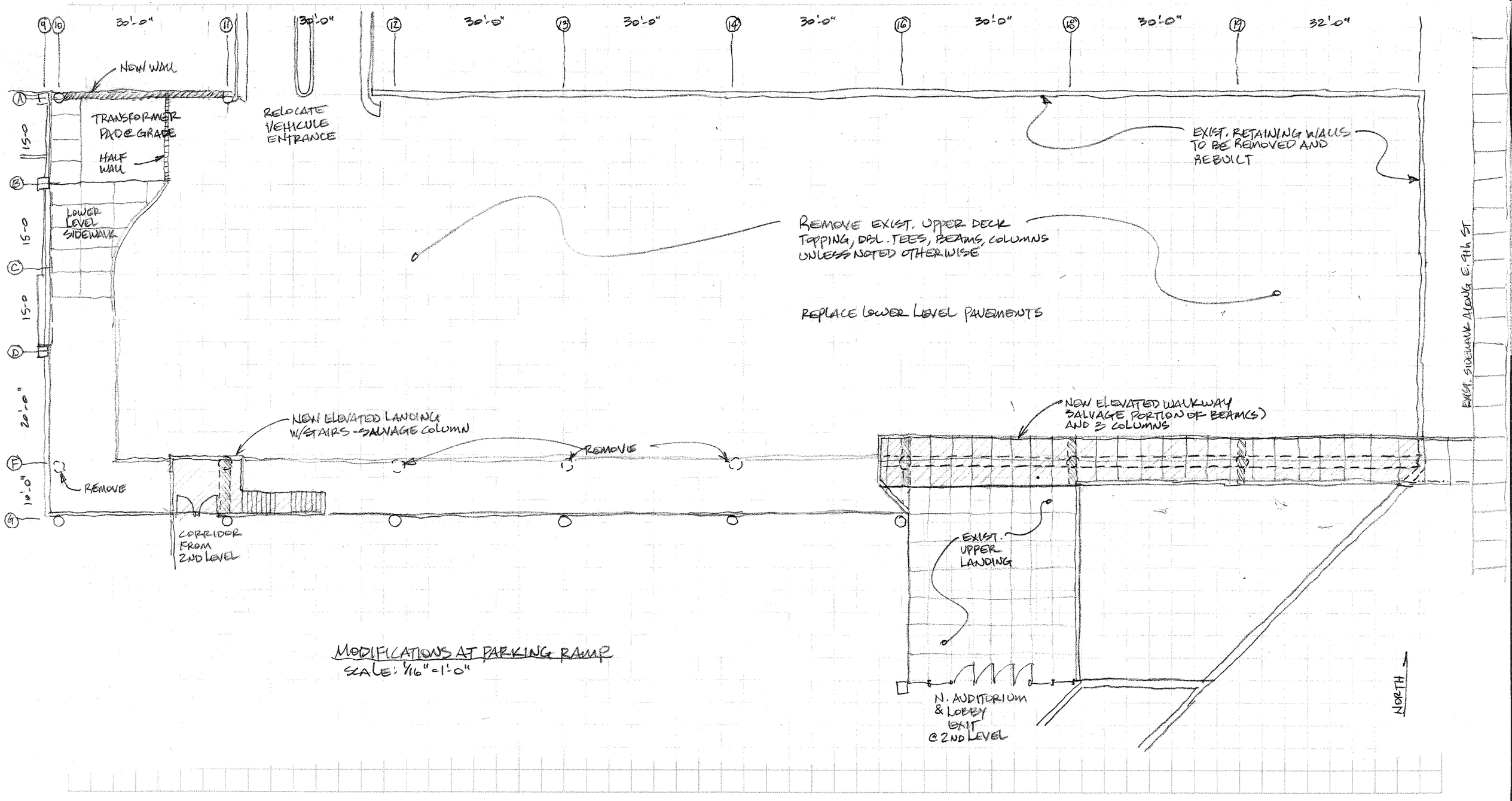
1" = 20'

DESIGN MEMORANDUM

Client: STATE OF IOWA
Project: WALLACE BUILDING
Data For:
Prepared By: LWB Checked By:

146259 SK-ARCH-002
Sheet ____ Of ____
Date: 29 NOV., 2004
Work Order: 146259
File No:

Note: This form must be used for project calculations and original filed in project files



MODIFICATIONS AT PARKING RAMP
SCALE: 1/16" = 1'-0"

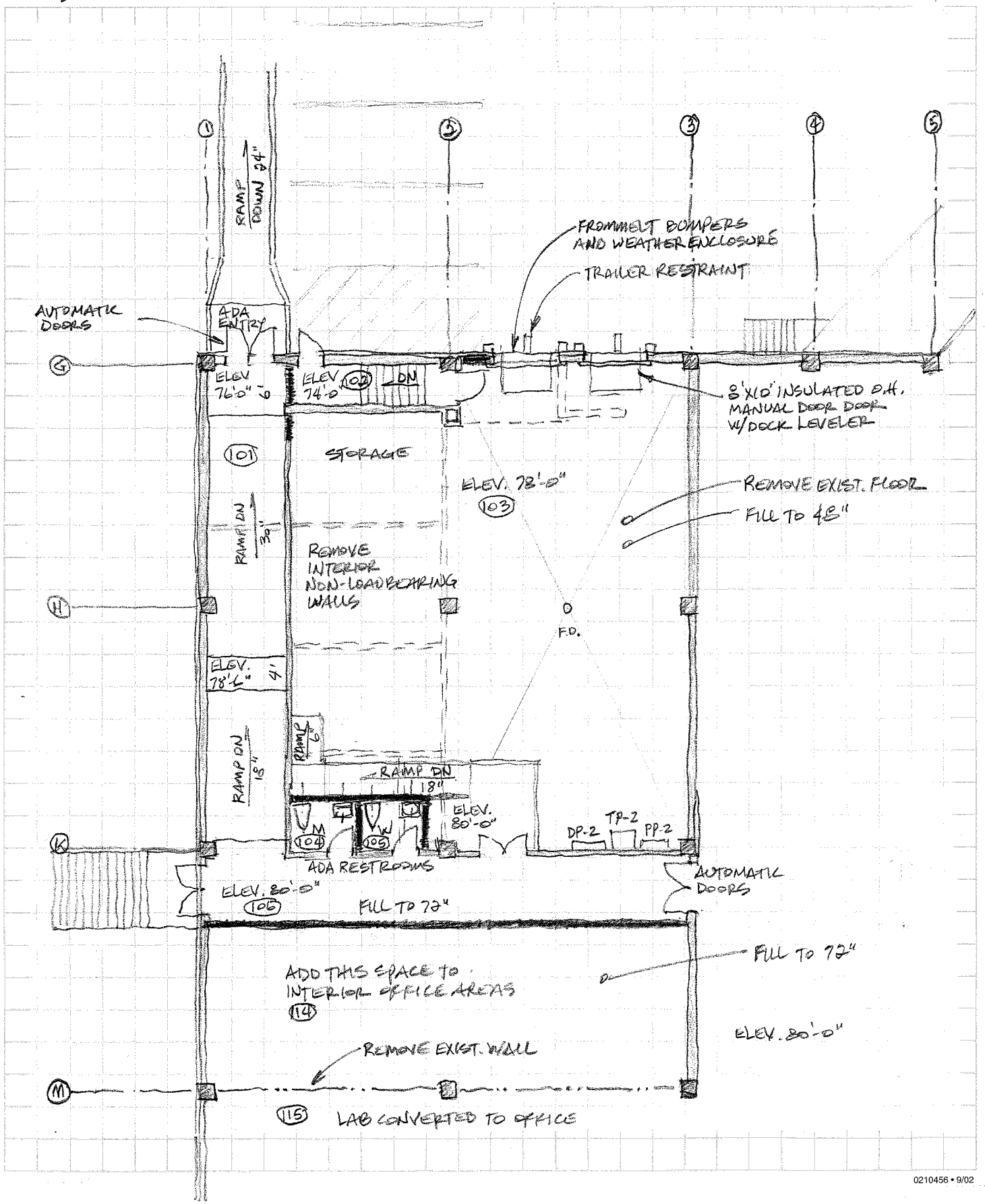
CALCULATION SHEET

amec

WALLACE BUILDING 146259-SK-ARCH-003 REV. 1

SUBJECT PROPOSED LAYOUT FOR PREVIOUS METROLOGY LAB SHEET NO. OF JOB NO. 146259

BY LWB DATE CHKD. BY DATE 6 DEC, 2004



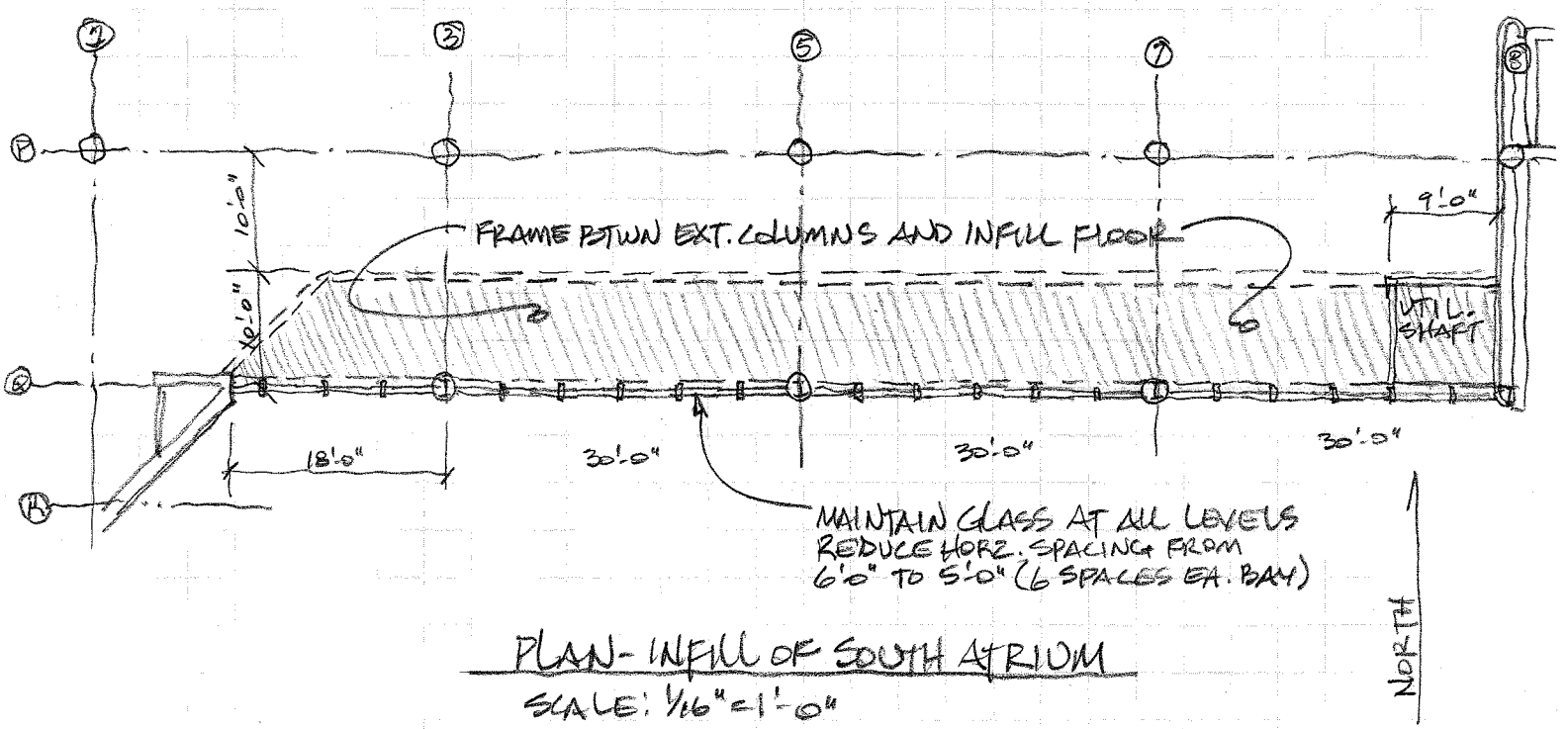
CALCULATION SHEET

amec

STATE OF IOWA — 146259-SK-ARCH-004

SUBJECT WALLACE BUILDING — SHEET NO. — OF — JOB NO. 146259

BY LWB — DATE 29 NOV., 2004 — CHKD. BY — DATE



PLAN - INFILL OF SOUTH ATRIUM

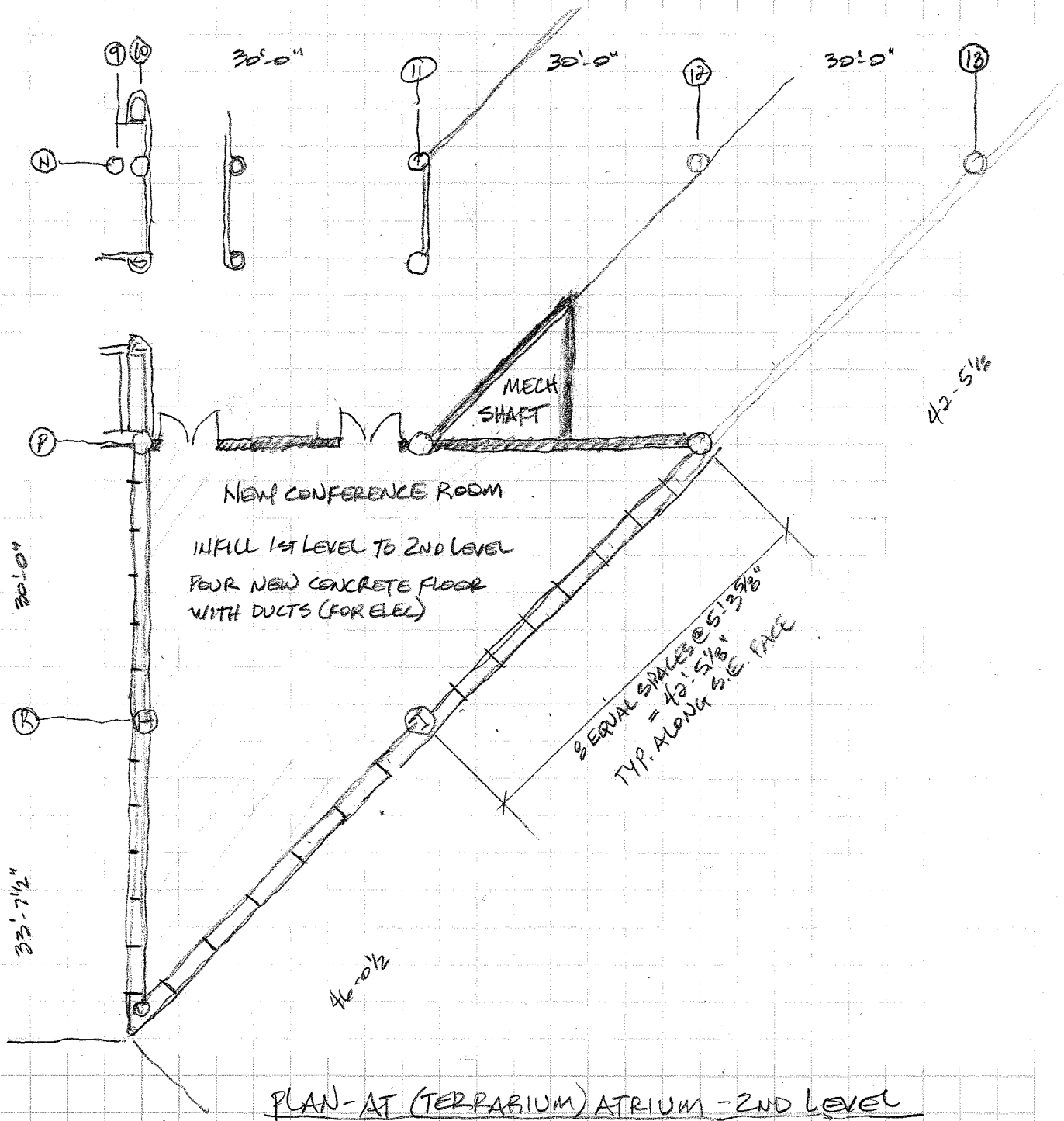
SCALE: 1/16" = 1'-0"

CALCULATION SHEET

STATE OF IOWA — 146259-SK-ARCH-005

SUBJECT WALLACE BUILDING — SHEET NO. — OF — JOB NO. 146259

BY LWB — DATE 29 NOV., 2004 — CHKD. BY — DATE



PLAN - AT (TERRARIUM) ATRIUM - 2ND LEVEL

SCALE: 1/16" = 1'-0"

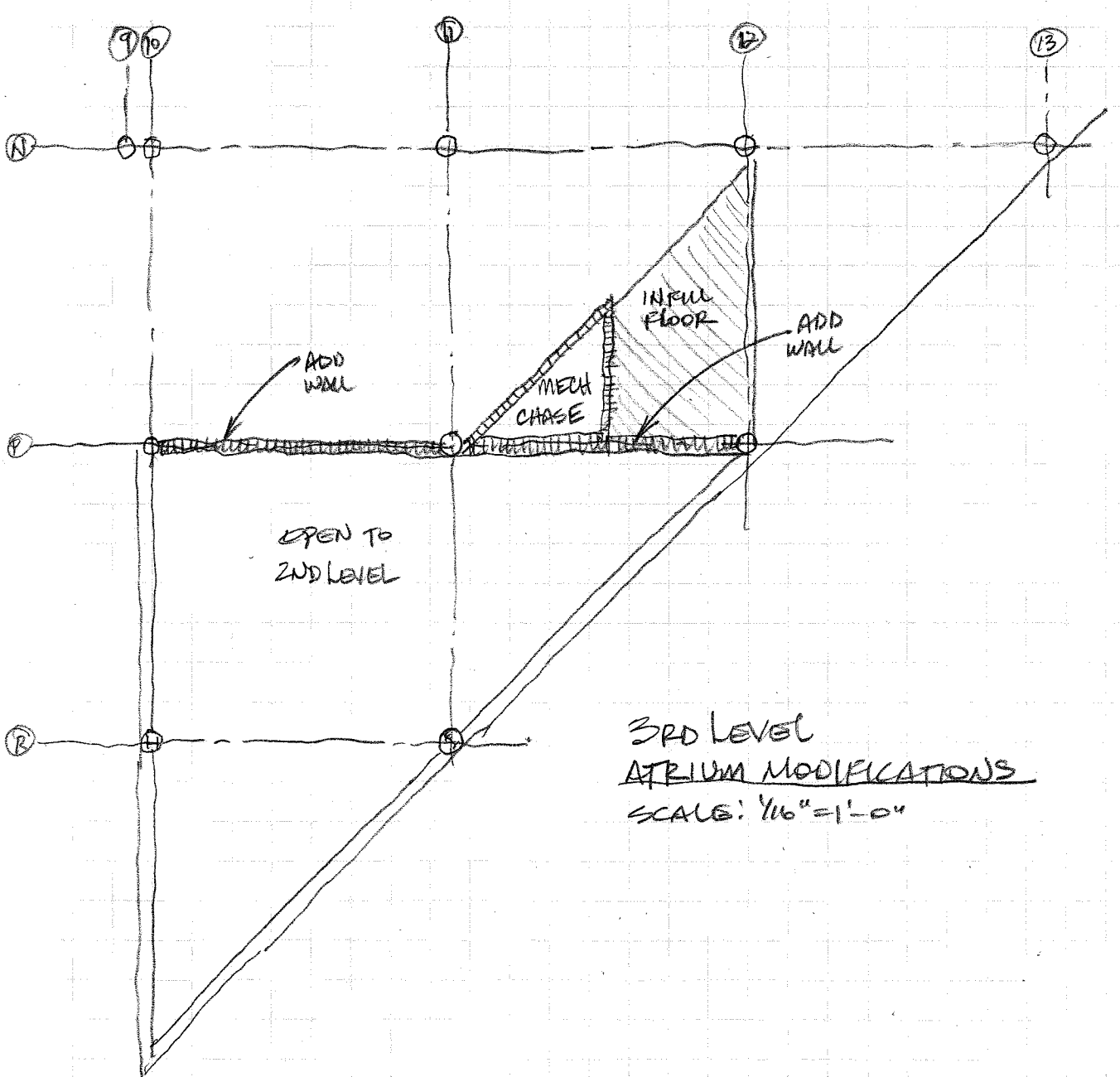
SIMILAR AT 4TH LEVEL

CALCULATION SHEET

STATE OF IOWA 146259-SK-ARCH-006

SUBJECT WALLACE BUILDING SHEET NO. OF JOB NO. 146259

BY LWB DATE 09 NOV., 2004 CHKD. BY DATE



3RD LEVEL
ATRIUM MODIFICATIONS
SCALE: 1/16"=1'-0"

DESIGN MEMORANDUM 146259-SK-ARCH-007

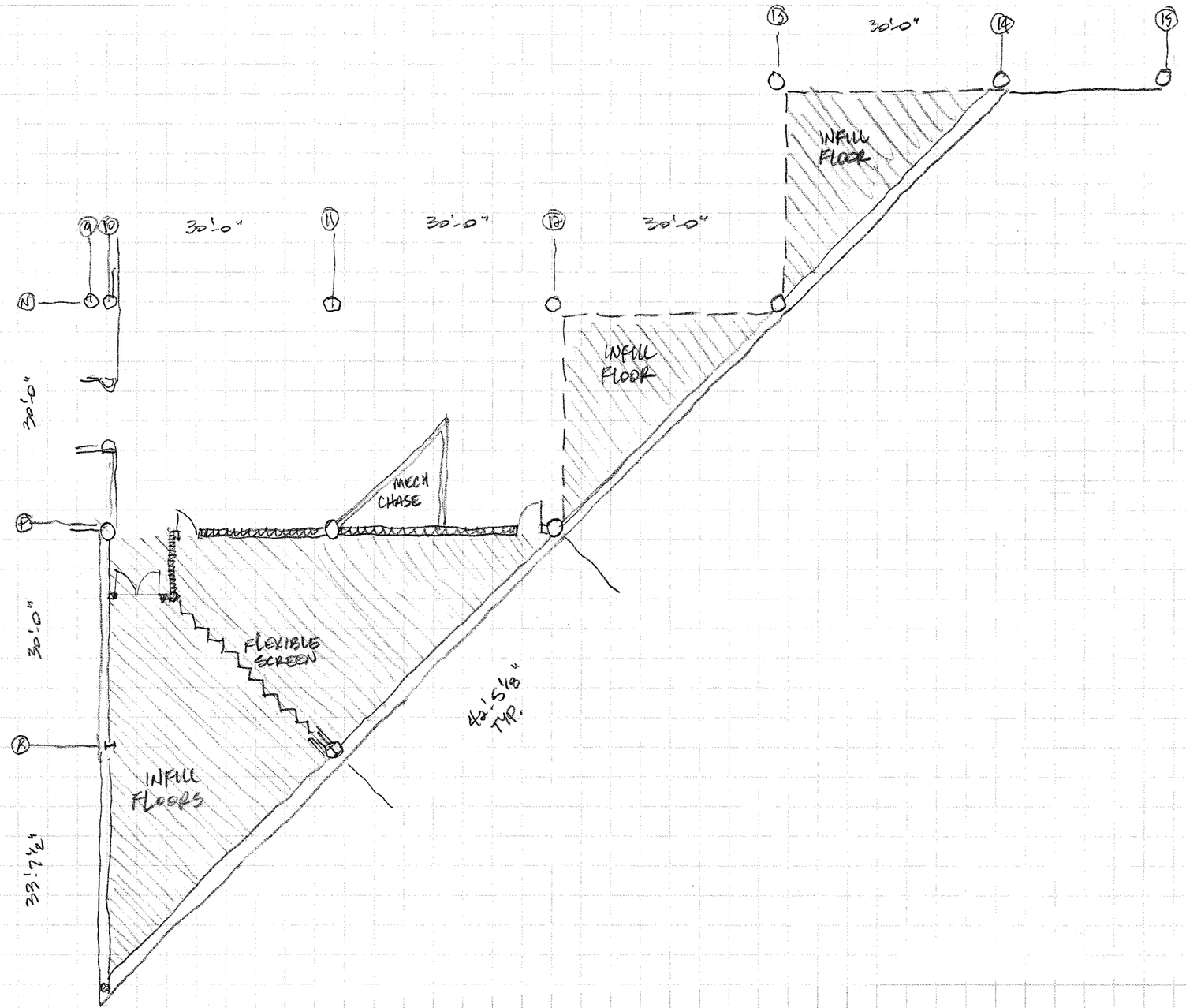
Client: STATE OF IOWA Sheet ____ Of ____

Project: WALLACE BUILDING Date: 29 NOV., 2004

Data For: ____ Work Order: 146259

Prepared By: LWB Checked By: ____ File No: ____

Note: This form must be used for project calculations and original filed in project files



DESIGN MEMORANDUM

146259-SK-ARCH-008

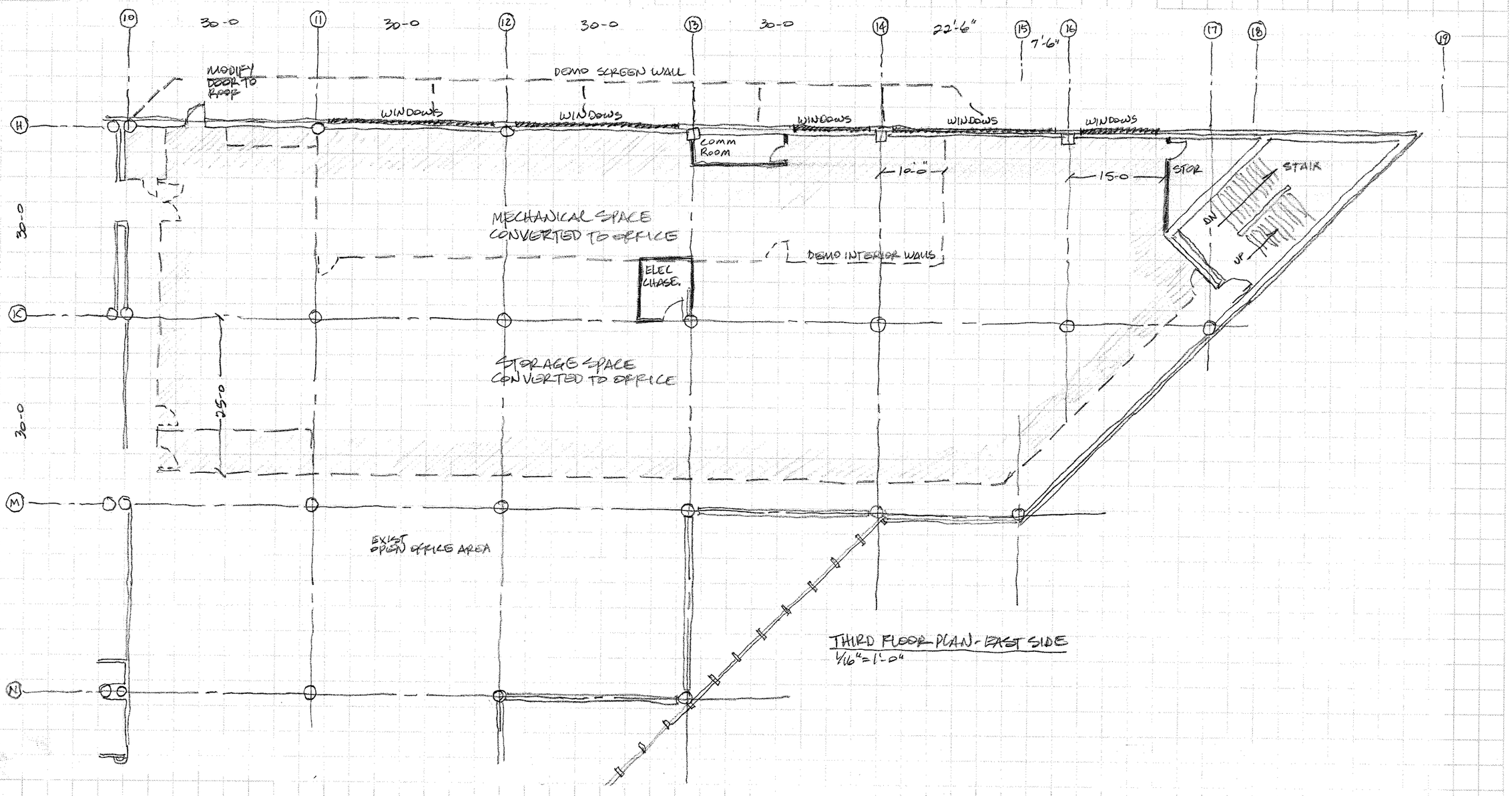
Client: STATE OF IOWA — Sheet ____ Of ____

Project: WALLACE BUILDING — Date: 7 DEC., 2004

Data For: 3RD FLOOR - EAST WING — Work Order: ____

Prepared By: LWB — Checked By: ____ — File No: 146259

Note: This form must be used for project calculations and original filed in project files



THIRD FLOOR PLAN - EAST SIDE

1/16" = 1'-0"

DESIGN MEMORANDUM

Client: STATE OF IOWA

146259-SK-ARCH-009 Sheet ____ Of ____

Project: WALLACE BUILDING

Date: 7 DEC., 2004

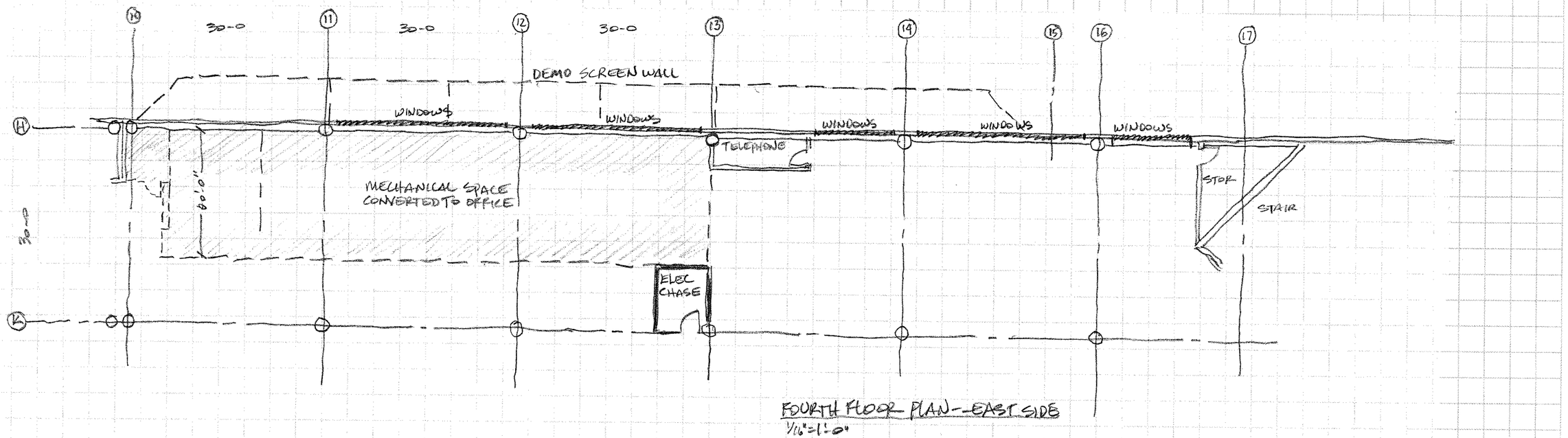
Data For: 4TH FLOOR - EAST WING

Work Order: ____

Prepared By: LWB Checked By: ____

File No: 146259

Note: This form must be used for project calculations and original filed in project files



FOURTH FLOOR PLAN - EAST SIDE

1/16" = 1'-0"

DESIGN MEMORANDUM 146259-SK-ARCH-010

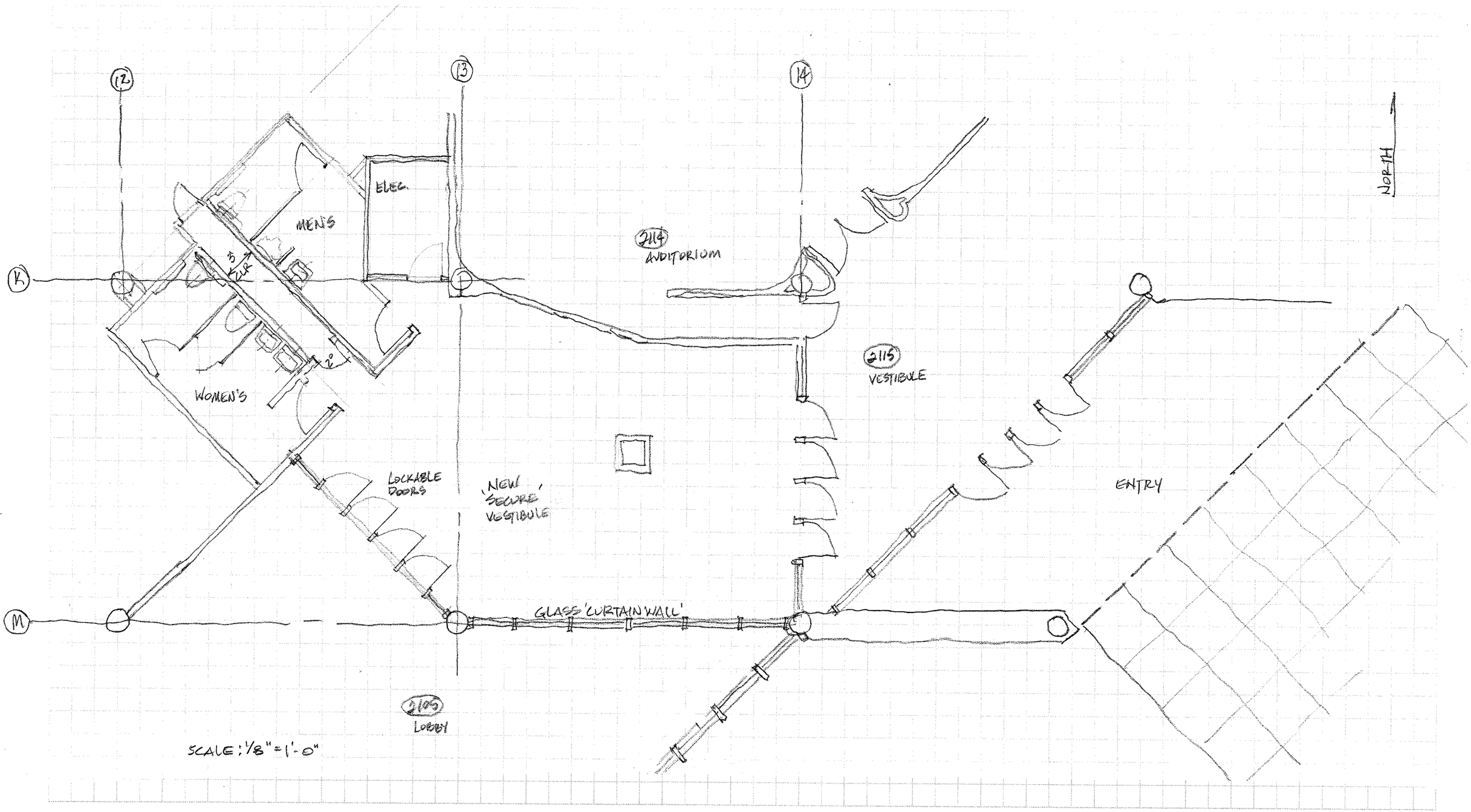
Client: ~~STATE OF~~ IOWA Sheet ____ Of ____

Project: WALLACE BUILDING Date: 7 DEC., 2004

Data For: LOBBY REDESIGN Work Order: ____

Prepared By: LWP Checked By: ____ File No: 146259

Note: This form must be used for project calculations and original filed in project files



SCALE: 1/8" = 1'-0"

New Air Handling Unit (AHU-1)
- Packaged custom penthouse style
- Indoor service vestibule
- Height with curb is approx. 14 ft.
- Approx. 95,000 CFM
- Serves 1st & 2nd Levels
- Replaces existing AHUs 1 & 2

AHU-1

North Screen Wall (Remove)
- Outside air intake louvers & ducts
- Relief air exhaust louvers & ducts
- All to be removed

2nd Level Roof Areas

New Air Handling Unit (AHU-2)
- Packaged custom penthouse style
- Indoor service vestibule
- Height with curb is approx. 14 ft.
- Approx. 95,000 CFM
- Serves 3rd, 4th, & 5th Levels
- Replaces existing AHUs 3 thru 8

1st Level Roof Areas

AHU-2

2nd Level Roof Areas

Elevator Penthouse

1st Level Roof Areas

New Hot Water Heating Fin Tube Elements
- Under large glass areas on Levels 2 -5
- Custom architectural covers

Possible New Vertical Chase
- Extends from 1st through 5th Levels
- Supply ductwork & return air shaft

Possible New Vertical Chase
- Extends from 1st through 5th Levels
- Supply ductwork & return air shaft

New Hot Water Heating Fin Tube Elements
- Under large glass areas on Levels 2 -5
- Custom architectural covers

PROJECT PHASE		AREA	WALLACE BUILDING
PROJECT NO. 146259		SUBJECT	HVAC Roof Plan MECHANICAL
SCALE 1" = 30'	BY BP / D/M/Y	CLIENT DWG. NO.	
		DRAWING NO. 146259-SK-MECH-001	REV. 1

amec

REV D/M/Y

12-15-04